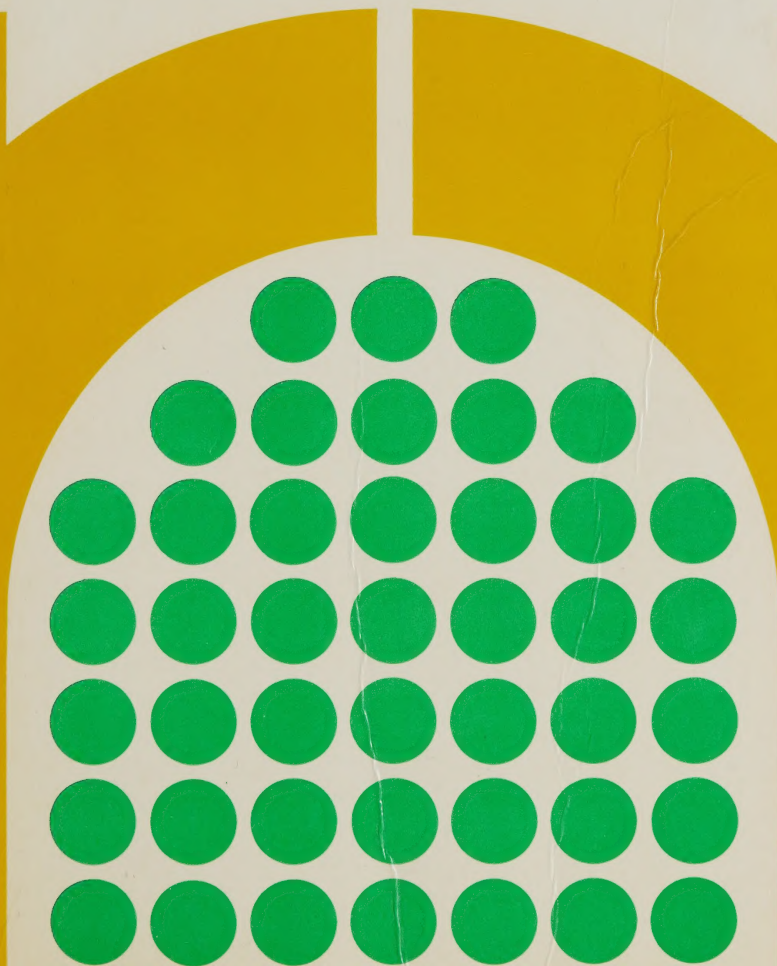



Proceedings of the **Resources for Tomorrow** Conference held in Montreal, October 23-28, 1961, in which Canada's renewable resources are considered in relation to national, regional and provincial goals for economic development; some problems of resource policy, management and administration being identified, and guidelines for action proposed.



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# RESOURCES FOR TOMORROW

v. 3



Resources for Tomorrow



CANADA

Issued under the authority of

The Honourable Walter Dinsdale, P.C., M.P.

Minister of Northern Affairs and National Resources

1962

# *Resources for Tomorrow*

Proceedings of the Conference

Volume III

## PUBLICATIONS OF THE "RESOURCES FOR TOMORROW" CONFERENCE

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OTTAWA, February 1, 1962.

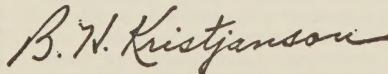
TO THE HONOURABLE WALTER DINSDALE,  
CHAIRMAN,  
STEERING COMMITTEE,  
"RESOURCES FOR TOMORROW" CONFERENCE.

SIR,

I have the honour to submit herewith the Proceedings Volume of the series of publications arising from the "Resources for Tomorrow" Conference held in Montreal, October 23-28, 1961.

In addition to the Proceedings Volume the series includes Volumes Number 1 and Number 2 of the Background Papers, submitted to you under date of July 14, 1961, a short compendium of additional Background Papers received too late for publication prior to the Conference itself and a volume entitled Guide To Benefit-Cost Analysis, being a report on the findings of a special committee, reviewed in the Water Sector of the Conference.

Respectfully submitted,

A handwritten signature in dark ink, reading "B. W. Kristjansson". The signature is written in a cursive style with a long, sweeping underline.

Secretary,  
"Resources for Tomorrow" Conference.

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# Introduction

## Conference Goals, Process, and Guidelines to Action

The "Resources for Tomorrow" Conference was not the first attempt to bring into national focus the problems associated with developing Canada's renewable resources; nor will it be the last. Viewed in historical perspective, the Conference was built on a number of precedents reaching back to the opening years of the century and the birth of the conservation movement. Yet the "Resources for Tomorrow" Conference differed markedly from its predecessors in its goals, its processes and the guidelines to action which it produced.

The Ministers on the National Steering Committee for the Conference set the following objectives: to define goals in their respective and joint resource development and management programs; to enunciate acceptable principles; and to define guidelines to action necessary to sustain an adequate rate of growth in the national, provincial and regional economies.

The process which was conceived to achieve these ends departed in many respects from those usual to a national conference. Planning and preparation encompassed nearly three years. The technical input included more than 80 papers by authorities across Canada, published in advance. The Conference itself assembled about 700 delegates representing a wide variety of disciplines and governmental jurisdictions. Political leaders rubbed shoulders with public servants and representatives of private industry; foresters met with farm management specialists; federal technicians with provincial technicians. No Canadian conference before had provided the opportunity for an interaction of so many points of view on the problems of resource development.

The Conference was unique too in the breadth of its agenda. Plenary sessions were designed to place resource development in perspective within the total economic and political framework. Workshop sessions undertook consideration, not only of specialized technical questions, but also of broader administrative, jurisdictional and regional aspects. Each participant, whatever his special interest, had the opportunity to explore problems by resource sector, by problem area and in the context of regional development.

One fact which emerged clearly from the Conference was that the overriding gap in resource development, administration and management has been the lack of co-ordination between governments, and between government departments within governments. This deficiency has been more pronounced in some instances and in some periods than in others.

It has resulted from inadequately defined goals, coupled with ill-defined means to reach such goals as may have been enunciated.

At the same time, the Conference recognized that we live within the system of Canadian federalism in which the ownership of resources has been vested for the most part in the provinces, while fiscal, monetary and trade policies are largely the domain of the federal government. The means for a constitutionally acceptable program of development, therefore, lie in two separate levels of government. Jurisdictional aspects of federal-provincial relations have, of course, long been the subject of analysis and debate, and a co-ordinated national resources policy continues to be an elusive goal. But steps have been taken from time to time that bring the country closer to a national definition of policy goals and means of implementation. This Conference achieved some important steps in that direction.

Exploration of the implications of co-operative federalism for resource policy emerged as the most exciting and meaningful accomplishment of the Conference. This exploration was based on face-to-face discussions by resource managers and technicians from all parts of Canada—from government departments, industry, universities and private organizations. They freely explored the content of provincial, regional and federal points of view. Discussion took place in an atmosphere in which the Prime Minister, the Premiers of the provinces and the Ministers of the governments had given the "green light" to free and open discussion. It was precisely this guarantee of freedom of discussion, coupled with the high technical caliber of participants, that provided the basic condition required for a successful conference within our system of government. Resource management is beset by jurisdictional uncertainty and at the same time dependent on a reasonable measure of accommodation by the eleven senior governments to the elusive but vital national interest in an adequate rate of national and regional growth.

It became abundantly clear through discussions at the Conference that some provision would have to be made for a regular exchange of views on resource policy matters among the eleven senior governments. Accordingly, all governments subsequently agreed to form a Resources Ministers Council which will meet several times each year for this purpose. Further, all governments have established, or have agreed to establish, the necessary co-ordinating machinery to



permit full interdepartmental co-operation in resource policy matters. These items stand as substantial accomplishments of the Conference.

One of the important results of the Conference was to expose the need to build more effective resource policies within jurisdictions and to examine some of the means by which this could be accomplished. Also of significance was the Conference's focus on an interdisciplinary approach to resource management. This resulted in a broader appreciation of the relationships of fiscal, monetary, tariff and trade policies to resource development as well as the need for a more systematic exchange of views

between experts in the various sectors. Similarly, within disciplines and within resource sectors, the stage has been set for increasing national consultations in the years ahead.

A summation of the goals, principles and guidelines to action arising from the Conference is provided in Appendix II. This was prepared by the Research Coordinators, based on their analysis of the Background Papers, the technical papers presented at the Conference, and the workshop reports. The reader may find it helpful to refer to this summation before reading the more complete accounts of the Conference sessions.

B. H. K.



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# Opening Ceremonies

Monday, October 23, 1961.

Chairman: Hon. WALTER DINSDALE, P.C., M.P.

Welcoming Addresses: His Excellency Major General GEORGES P. VANIER, D.S.O., M.C., C.D., Governor General and Commander-in-Chief of Canada.

His Worship JEAN DRAPEAU, Q.C., Mayor of Montreal.

## Governor General Vanier

J'éprouve toujours un vif plaisir à revenir dans ma ville natale. Je ne veux pas empiéter sur le domaine de M. le Maire qui va vous accueillir dans un instant, mais je me permets de souhaiter à tous les délégués la plus cordiale bienvenue.

Sans doute avez-vous remarqué le timbre spécial émis pour attirer l'attention du public sur le congrès auquel vous participez. Son symbolisme est beau. Il dépeint la terre et les eaux, les animaux et la forêt encadrés dans une roue dentée, le tout étant soutenu par deux mains. En effet c'est bien l'appétit vorace de notre société industrielle qui risque d'abuser des richesses de la nature. Seules la volonté et la main de l'homme peuvent soumettre cet appétit au contrôle qui s'impose. Mais ce contrôle ne peut s'imposer qu'à travers la collaboration des hommes. Voilà la signification des deux mains qui se tendent dans la même direction.

Vous, Messieurs, êtes la promesse d'une collaboration naissante et grandissante. Onze gouvernements, des universités, et des organismes privés sont représentés à cette assemblée. Les deux dernières années ont vu s'accomplir un travail fructueux de préparation, comme le témoigne la documentation sur les études et les recherches que l'on vient de publier.

Il s'agit maintenant d'étudier, à la lumière des enquêtes déjà faites, les grands problèmes dans le domaine des richesses renouvelables, afin de leur trouver une solution.

Les buts que ce Congrès se propose sont d'une importance capitale non seulement pour notre avenir et celui de nos enfants, mais également pour celui d'autres pays qui comptent sur nos exportations.

Conscient des responsabilités qui vous incombent, je formule des vœux ardents pour le succès du Congrès.

Is the plight of mankind a constant? You will perhaps think so if I quote to you some lines from Shakespeare:

" . . . For it so falls out,

That what we have, we prize not to the worth,  
Whiles we enjoy it; but being lack'd and lost,  
Why then we rack the value, then we find

The virtue that possession would not show us . . . "

His words have real meaning today for it seems that when resources are considered unlimited they then are held to be of little account. It is only when the wells begin to run dry and the deserts to advance that we start to prize our wealth at its true value.

Looking at your subject from an historical point of view one might say that it has passed through four periods which I would describe as those of *devastation*, *preservation*, *conservation* and now, I hope, *management*. As regards the first, the era of the great buffalo hunts and of the ruthless clearing of whole watersheds may seem to be long since past. Nevertheless, I am sure that many of you can recall the dust clouds that used to hang over the Prairies, the baleful consequence of overexploitation. By reaction against this first epoch of greed and ignorance there arose a clamor for preservation, expressed sentimentally perhaps in the cry: "Woodman, spare that tree." A more sophisticated answer came with the conservation movement. In the United States, Theodore Roosevelt was the chief leader of this movement, while in this country, it took shape under the aegis of the short-lived Canadian Commission of Conservation. The concept of management, as applied to renewable resources, is of still more recent origin.

We may realize how desperately urgent it is that this concept be developed and applied, if we consider just one item brought to light by the members of the Paley Commission. Their authoritative report published in 1952, showed that the weight of materials used, directly or indirectly by each human being in the United States amounted to 18 tons per year; this was no vague estimate, but a careful calculation made up as follows: seven tons of liquid and solid fuel, five tons of building materials, nearly three tons of fibers and other materials, together with three-quarters of a

ton of food—all this without counting the enormous quantities of water annually removed from the ground. Were comparable figures to be worked out for Canada, they would probably be higher, in view of our exports of raw materials.

It is not necessary to be a pessimist, which is the last thing I would want to be, to understand the dangers of a *laissez-faire* outlook that forgets about tomorrow. We are called upon to exercise forethought in an attempt to control our destinies. It is our imperative duty to manage our renewable resources. In order to do so, we have to make plans for their use. The plans in turn must be based on accurate and objective research.

In the words of the poet Milton:

"Accuse not Nature, she hath done her part;  
Do thou but thine."

This injunction opens up the prospect of a whole range of exciting, challenging new careers in the management of resources. The role of the engineer has been defined as "the art of directing the great sources of power in Nature for the use and convenience of man." If we substitute the word "resources" we have a stimulating description of the task of what I will call a *steward of tomorrow*. Imagine for the sake of example, the opportunity and the responsibility that would fall to, let us say, the co-ordinator of resources of the Nelson River Basin. This immense domain stretches from the Rocky Mountain peaks to the shores of Hudson Bay. It includes the greater part of the three Prairie Provinces, besides adjacent parts of Ontario and the United States. Within this area, it has been suggested that a population of 100 million could comfortably be supported.

This is but one instance of the sort of integrated regional approach that we shall be called upon to practice before long. I have already mentioned careers, and in this context I come naturally to a subject that is dear to me even if strictly speaking, it lies outside your terms of reference. I mean the human element, our resources in men and women. To exercise foresight, to make plans and to achieve a degree of control over our environment, all of this demands human will and human skill. That is one side of the question, but there is another, namely the object of all this effort. Surely, it can only be to enable all of mankind to live free and responsible lives. Such an ideal does not mean an endlessly rising standard of living for a minority; on the contrary, it implies a world society based on justice. In the eyes of humanity therefore, you are architects planning now for future generations. You are stewards on behalf of unborn millions. I beseech you, do not allow your talents and ours to remain buried and sterile, let them rather fructify, so that this verse may universally apply:

"When thou hast eaten and art full, then thou  
Shalt bless the Lord thy God for the good land  
which He hath given thee."

On this note, then, I have very great pleasure in declaring open this National Conference on Renewable Resources.

Mesdames, Messieurs, C'est avec joie que je déclare ouvert ce congrès sur "Les Ressources et notre Avenir!"

### Mayor Drapeau

\* I have the pleasure, as Mayor of Montreal, to extend on behalf of the city a most hearty welcome to all the participants in this first Canadian conference on renewable resources. Never before in the history of Canada have the federal government and the ten provincial governments considered assembling the most distinguished Canadian specialists in the field of natural resources and inviting them to examine together the resource development problems for the whole of Canada.

We are flattered, for more than one reason, that this meeting is taking place in the Province of Quebec and in particular, in the City of Montreal. We consider it more than a simple coincidence that our city has been chosen as the meeting place for discussions of such importance. Montreal actually symbolizes, perhaps more than any other Canadian city, the expansion of the whole country and the primary role of natural resources in its economic and social growth. Far from invalidating your theses, the view of the spectacular developments witnessed in Montreal will only confirm them. It will encourage you to continue your studies and it will stimulate your efforts. Our city, however, would be merely an unimportant island were we not to take into account the surrounding lands and their wealth. Montreal closely participates in the progress and prosperity of the whole Province of Quebec, is associated with these activities and constantly benefits from them. Few areas of the world have known during the last half century such important changes as the Province of Quebec has known. To appreciate the magnitude of the change, one need only review the scientific or literary works devoted to this province 50, or even 25 years ago. The scientific works are only of historical interest, while the literary essays move us and make us laugh, somewhat like the yellowed photographs of yesterday.

The last half-century has therefore brought a cruel denial to the words which Louis Hémon, author of *Maria Chapdelaine*, put into the mouth of one of his characters: "In Quebec, nothing must die or change..."

\* Translated from French.

Indeed, in Quebec, many things have changed and we are not through assessing the deep consequences of technical progress.

With its five million population, the Province of Quebec has now become an industrial power with an ever-increasing annual production both in volume and in value, which provides the federal Government of Canada with one-third of its resources and which ranks second in the country, immediately behind Ontario and far ahead of the other provinces. The investment made in the province after the last World War by Canadians and foreign investors are of the order of several billion dollars. Every year, dozens of important businesses and hundreds of medium or small industries are established in this province.

Areas which were considered until now for all practical purposes as wilderness and without interest have witnessed true miracles. Names of areas like New Quebec, Chibougamau, Seven Islands, Baie Comeau, Schefferville, which were unknown not long ago, speak for themselves in the matter of changes brought about by the development of mining, forest and water resources.

In the hydroelectric field, the Province of Quebec undeniably ranks first. It also accounts for half the Canadian production of paper pulp. The Province of Quebec supplies countries from the four corners of the world with asbestos and aluminum. In 1959, its manufacturing production was estimated at \$7 billion, up 25 per cent from 1955. Before, we had only paper pulp and asbestos, but today we also have mines, chemical products, aluminum, oil and gas. To meet increased needs and a demand that in a short period of years has outstripped provincial capacity, it was necessary to call upon the most modern methods; to create, to build and to launch all kinds of industries, using increasingly abundant raw materials which may be processed and converted into consumer goods, thanks to inexhaustible hydroelectric power.

Montreal is the giant of this whole picture, but the familiar sight of a metropolis with its manufactures arising in the midst of an area devoted strictly to agriculture and to handicrafts is now out of season. Large manufacturing plants are now everywhere. This distribution of manufacturing and business concerns is above all a result of the technical developments of recent years which has brought about both the development of new industries and a rational decentralization of existing industries.

I have reviewed briefly the economic growth of Quebec to illustrate the importance of the discussions

about to open on the natural resources of our country and the highly valuable assistance of specialists in their rational development. The progress and the prosperity of a country are not only closely related to its resources but also, to a great extent, to their development and their rational and far-sighted use. These are urgent problems for our economic survival to which we must give first priority in the light of the scientific and technical efforts of other countries.

\*Together, you will engage in a thorough study and analysis of all the natural resources with which Divine Providence has favored our country. There is no doubt in my mind that the results of this Conference will be impressive and prove of inestimable value in the formulation of the proper development of Canada's future.

We must not forget, however, that natural resources are not our only assets. There is an even greater one which, while not the direct concern of your studies of this week, is nevertheless one which cannot be lost sight of. I speak, of course, of our human resources.

To know how many millions of barrels of petroleum this country has, how many tons of iron ore, how many kilowatts of undeveloped water power, how many square miles of virgin forest—this, and how to best make use of it, is priceless information. But, what will it all mean if we do not, at the same time, have an equally thorough knowledge of ourselves, our capacities and our willingness to apply the policies which your Conference will suggest.

I am pleased to know that the Conference recognizes the importance of this, and implies in its program that the subject of human resources requires an attention equivalent to that which is being given to material resources. Knowledge of our material wealth means little unless it is also accompanied by a knowledge of our human wealth. I do not know if a Conference on human resources is scheduled for the near future. Certainly, I do suggest that anything approaching it will be a perfect complement to the magnificent task which you begin today.

Again, may I thank you for having chosen Montreal as the site of the first of which, I hope, will be many such conferences. We are indeed honored to have you with us, and sincerely hope that we will have the opportunity to play host to other such gatherings in the future. I can assure you that you will always be welcome.

---

\* Originally in English.





# Historical Perspectives and Expectations of the Conference

Monday, October 23, 1961.

Chairman: Hon. J. W. SPOONER, Minister of Lands and Forests, Province of Ontario.

Speaker: Hon. WALTER DINSDALE, Minister of Northern Affairs and National Resources, Government of Canada; Chairman of Steering Committee, "Resources for Tomorrow" Conference.

## Mr. Dinsdale

I welcome you warmly this morning, on behalf of the National Steering Committee, to this historic occasion. While only in the light of history will we be able to judge the significance of the Conference which is about to commence, I venture an opinion right at the outset that next to the Conferences which preceded Canadian Confederation, this is the most significant meeting ever held in the history of our young nation. I am fully aware how indiscreetly and indiscriminately orators use the phrase: *historic occasion*. For this reason, I have chosen the words carefully and deliberately. The "Resources for Tomorrow" Conference is a unique and epochal event.

For the first time, all eleven governments have come together to carry through a national project of self-appraisal of policies and actions in the resource field. We have had federal-provincial meetings in the past, but none like this. This Conference is financed by all governments and directed by all governments through a Steering Committee made up of one representative from each. I am addressing you now only because I am Chairman of that Steering Committee of co-equal members. In this capacity, there is reflected no superiority with respect to the responsibilities of the role of the federal government.

Moreover, there are gathered before me this morning some seven hundred Canadians from all parts of Canada, all walks of life, authorities in your respective renewable resource areas. You have come together at considerable personal expense in time and money to seriously discuss the wise management of renewable resources; not with a view to immediate personal gain, but rather in the interest of generations yet unborn. Right at the outset of my remarks then, I would suggest that this places the Conference on

a high moral plane; indeed, I think it expresses the essence of our Christian ethics. Man, because of his egocentricity, is inclined to take a short-sighted view of things. To use the vernacular, "he wants what he wants when he wants it." Yet, here we have a group of Canadian leaders deeply concerned about the future. Surely, this is an encouraging development in the Canadian body politic for, in the final analysis, conservation is a moral issue, as all issues are moral issues.

It is a particularly significant development in a country like Canada where, up until recently, we have been motivated by a frontier philosophy in our exploitation of resources. In North America, there have always been new worlds to conquer, whereas the truth of the matter is that we are now well on the way to occupying our last frontier, the huge, vast territory "North of Sixty." Perhaps it is this new northern orientation which, for the first time, has made us aware that, even in God's own country, the natural endowment is neither inexhaustible nor indestructible.

For an appreciation of the broad scope of the Conference we need only look to the participants. We can note immediately too that it is different from all other conferences in that it cuts across a range of resources and a range of problems related to these resources, from research to jurisdiction, and across a range of professions and interests from government to industry and universities, from biologists and anthropologists to zoologists and economists. I don't know why they place the economists last, there is no precedence in that order of things, as you will see as I proceed with my remarks.

Look at its objectives. We are here, determined to do more than just talk. Armed with the insights

and the impetus which will be generated by this Conference, we expect to advance in terms of developing what Prime Minister Diefenbaker has described as a "blueprint for a national development policy."

Such a policy can only be hammered out in this type of Conference where we refer not to just a federal development policy, but to a *national* policy, one in concert with the provinces which after all, carry a major part of the responsibility through their constitutional power over our natural resources. Under the present auspices, we can look to the problems as a nation on a national plane. Then, in implementing the necessary measures, we can return to the division of responsibility which our Constitution sets forth. In proceeding in this way, we must look at our development goals and see their regional and structural elements from the vantage point of the nation.

Since there is always a danger that there will be a great deal of drifting from original conceptions once the project is launched and is buffeted about by various pressures, it might be appropriate to remind ourselves about the original objectives of this Conference as conceived by the Steering Committee during its first meeting on November 17, 1958.

As I read the record of those early meetings, a striking feature that emerged was the unanimity of opinion that the multiple use aspects of resource management should be a principal focus of the Conference. Conservation, to have any meaning, it was said at that meeting, must mean wise management for development, and such wisdom must be based on a thorough understanding of the multiple uses to which resources should be put. Thus, a new connotation has been given to the word *conservation*, which had been coined early in the century to mean *preservation*. Today, we can no longer merely preserve. All our renewable resources must be developed fruitfully together to ensure their continued availability for future generations.

I feel that there is reason to be optimistic concerning the results of this Conference because it is based on the foundation of research in the broadest sense. This Conference caps a program that has called together people from all parts of the country, and from all the related professions and institutions, to discuss and recommend what areas are appropriate to resource policy and those that should be explored. The probing was undertaken with the help of many of you who are here today. Almost half of those who are before me this morning were members of the advisory groups called upon by the Secretariat for advice and other forms of help. The publication of 80-odd Background Papers is but one part of the result. This printed record itself will serve as a

valuable point of reference and as a foundation stone for resource policy changes across the country. Already one university has indicated its intention to use this material as textbook background, and I know from my sojourn in the Ivory Tower that in the past, particularly in the areas of the social sciences, there has been a great dearth of suitable and adequate Canadian background material.

I can imagine that the question which is uppermost in the minds of all of us here is: How can we best use the Conference to realize its potentialities? I presume of course, that you have prepared yourselves by the digestion of the heavy fare before you, that you have read every word—I wonder how many have gone through those interesting volumes. It has high nutritive value as food for thought; it looks forbidding because it has taken little for granted in its selection and treatment of problems. Already, members of the Fourth Estate in Canada have done some outstanding analyses of these papers, and I would presume that at least all of us have read these summaries, particularly the summaries from the pen of Walter Gray of the *Globe and Mail* which has been made available in booklet form for this Conference. We appreciate the interest and the co-operation of all the members of the Fourth Estate: the press, the radio, the television which have already given publicity to this Conference which exceeds the publicity given to any other preceding conference. I am sure that during the week they will carry forward what we regard as perhaps one of the most important aspects of the Conference: the educational aspect, communicating what takes place here to the public across the nation.

The Conference has been organized with great care by a highly qualified Secretariat to achieve maximum results. I take this opportunity to thank Dr. Baldur Kristjanson and his dedicated staff who have worked behind the scenes for more than two years in preliminary preparation. I hope you will meet the members of the Secretariat during the week. I wish I had time to mention them all by name; there is not time to do so on this occasion, but I do hope that you will become acquainted with them because we have gathered together a group of Canadian specialists in the renewable resource field which we hope will continue together—at least some of whom will continue together—to carry forward the momentum that has been generated by the preparatory effort.

The Conference has been designed on a *workshop problem approach*. You have read the summaries. The three middle days, Tuesday, Wednesday and Thursday, are given over to workshop discussions, while Monday and Friday are focused on the broader framework of resource policy. If we are looking

for an underlying pattern to the types of problems that have been selected for plenary and workshop sessions, we find that, apart from some problems of a more technical nature, they emphasize development goals on a national scale. We are concerned less with resource development as such, and more with the promotion of economic development. The two are not necessarily synonymous. Resource development may not be the best way for a country to grow either in terms of speed, stability, or regional industrial structure. The relationship of natural resources to our goals of economic development must be well understood, and then we can more consistently adapt our jurisdictional, administrative, research, management, information-extension and other activities on all government levels. These problems have become especially urgent as Canada moves toward an urbanized industrial economy.

This is the rationale for Monday's plenary session themes. It provides the framework of reference for later discussions. It indicates that our concern is not just with resources alone but with resources in relation to capital and labor, and our complex of institutions as they all, in turn, relate to the objectives of growth. After all, our problems are how best to utilize resources for a better tomorrow; we have to put a value construction on things. We must be able to turn resources into income and employment opportunities.

In any case, where the accent is on development, its pace and its pattern, its quantitative and its qualitative dimensions, its physical and its social side—the scope and content of the resource policy is broader than the concern with resource development as such. The workshop problems in Friday's plenary sessions reflect this approach; they are concerned not only with the physical sciences, but also with the economic and social aspects and with adapting our agencies and their operations toward consistent, better co-ordinated policies and programs.

To emphasize the logic of this approach, let me refer to the development of the idea of this Conference. Thereby, we might gain a better or sharper perception of the main concern or objective of the Conference, and the logic of its arrangement. There is no need to go into the history, from the turn of the century onward, when conferences were held explicitly on the various problems related to resources. This Conference is not a direct lineal descendant of previous conferences. It is related, but in a different branch of the family. For this Conference, as an idea, was born and developed along rather distinct lines. The problems which gave it birth, or the needs which the Conference was designed to help meet, were related to the broader concern with the rate and manner of the development of the country. This called obviously for a

special approach. It called for an eleven-government project, for probing and comprehensive research, and for public discussion on how best to use our rich natural heritage of resources to meet the challenge of development.

Early in 1958, Prime Minister Diefenbaker, reflecting the growing concern for an organized approach to resource development, put forward the proposal that a national conference on resources should be held. In his speeches, at that time, he referred to the recurrent theme of a national development policy. Because of the division of responsibilities with respect to resources, it soon became quite clear that the distinction should be made between a national development policy and a federal development policy. The Conference was therefore conceived as a joint federal-provincial venture.

As we have been informed already this morning, the federal government took the initiative in convening a meeting with provincial representatives, and they met for the first time in November of 1958. My predecessor, Mr. Hamilton, as Chairman for the meeting, enunciated the types of goals which, he understood, the Ministers agreed upon. And it is remarkable how quickly the ministerial Steering Committee, drawn from all the provincial governments, came to a consensus on this very difficult matter. Basically, they agreed that we must look together at the problem of using resources for national growth. This meant that in undertaking research or devising a research program, the Secretariat would have to be an agency of all governments. At that time, no government was committed to anything more than an agreement to sponsor research and discussion. In other words, there was a recognition, there was a need, for a new approach which was not segmented by the jurisdictional divisions which have cut across the resource fields in Canada.

If I may summarize, a fourfold classification might be made of the range of expectations enunciated about this Conference at that first inaugural meeting.

1. First, it was designed to be informational in bringing together, organizing and exchanging information.

2. Second, it was meant to be innovational in the sense of analyzing available information and putting forth new ideas and principles on resource development in relation to economic development.

3. Third, it was designed to be promotional in considering legislative, administrative and other matters so as to enhance the possibilities of greater inter-governmental co-ordination, of improving resource management techniques, of integrating the resource policies with other aspects of over-all development policies, and so forth.



4. Fourth and finally, the educational value of the Conference soon became apparent; it was early realized that public opinion must be made aware of the new concept of resource development before legislative action could take place.

To bring the scope of the Conference within manageable proportions, it was deemed advisable to focus attention on the problems and possibilities related to renewable resources such as agriculture, soil, water, forestry, fisheries, wildlife and recreation.

It soon became apparent that there are several dimensions to the problems associated with these resources. For convenience they were classed under the headings: *physical, economic and institutional*.

1. The first relates to what is biologically and technologically possible with respect to the use of resources, which brings in the biologists, foresters, engineers and the like.

2. The second relates to what is economically and socially desirable, and this, of course, brings in the economist, the sociologist, the anthropologist and the other social science areas.

3. The third relates to what is institutionally feasible, which brings in the political scientist, the administrator, the constitutional lawyer and, of course and inevitably, now last but not least: the practicing politicians. Not the political scientist, but the political artist, I suppose we can call him.

When all these related aspects are considered, it becomes evident that many disciplines are involved, and when consideration is given to the institutional aspect—that is the institutions as they affect resource use—the whole gamut of social sciences are involved. In a pamphlet called "The Principles of Resource Conservation Policy," prepared by a Committee for the National Academy of Sciences, National Research Council of the United States, it is stated that, "Purposeful alteration of the institutions affecting resource use remains one of the more important as well as one of the more difficult aspects of resource conservation policy."

And one of the problems is fixing the responsibility for resource policy and establishing the criteria as well as the techniques for resource policy, and establishing the criteria as well as the techniques for government involvement. The government has an obligation to protect the public interest and to promote the public interest. This involves using the instruments of taxation and spending as well as of regulating and owning. Yet, on the other hand, in our democratic society it is realized that the ultimate initiative must come from the voluntary groups and associations. The great need today is for leaders endowed with a highly developed social consciousness and broad outlook capable of correlating and inte-

grating the separate bodies of knowledge. The understanding of interdependence is becoming a matter of life and death for modern civilization.

This is bringing me to what I regard as the most important aspect of this meeting, that is the spirit of the Conference. A new concept of inter-governmental co-operation was achieved, I believe, when the ten provinces and the federal government agreed to jointly sponsor and direct, through a ministerial Steering Committee and a smaller policy subcommittee, a Secretariat which would prepare for the Conference.

If we are to ensure the success of this meeting, the same harmonious relationship must be preserved. If we are to continue in this spirit, we must regard our complex of institutions—governmental, industrial, academic—as proper subjects for scrutiny. In fact, we should go as far as to say that for their health they need to be appraised in terms of how well they meet the challenge of keeping our country growing. Consider, to begin with, the fact that we have organized this Conference along the lines that I have outlined, establishing an historical precedent. It is all indicative of our willingness and also our capability to devise new methods of self-appraisal and of talking and working together to improve things in our country.

Let me be clear right at the outset that this Conference is not designed to come forward with specific decisions. Each government has the responsibility for this. But if the Conference appraises the present way in which we are doing things in the light of what we say we would like to achieve, and does so on a national level so that we can see what gaps there are in our present approach, I believe that we shall have taken a long step forward. It may suffice to point out the need in order to provoke and stimulate the governments to either undertake the appropriate measures individually, where this can be done, or jointly, where need be. Out of this need for common action may be born a new institution. It could be a Secretariat or a National Council for Resources Research. I don't want to anticipate in any specific way, but I submit this as an indication that we are here not merely to talk.

We are here on a working week to do practical things, and the test of practicality is whether the discussions can yield practical suggestions for either resolving or easing some of the problems we face, problems which relate to the use or the lack of use we may make of our natural renewable resources. We can take an approach which looks to short-term resolution of problems for each individual resource sector, or we can take problems which cut across regions and resource fields and which take a longer time horizon in looking toward the

future. We commence by concerning ourselves with the broad relationship of resources to growth, and our concern both in the opening and the last days of the Conference is with the types of problem related to "How we might employ more persons or direct more Canadian capital, or increase Canadian ownership of natural resources." The Tuesday to Thursday workshops are more sharply problem-focused. It is not necessary for me to elaborate on this procedure to make the point that this is a working Conference.

It suffices for me to urge you to enter into these workshops and plenary sessions in the frame of mind that is bold yet responsible; imaginative yet disciplined. We look to you to take this opportunity for frank and fruitful exchange.

Let me close with this thought about your role

here. A noted educator has penned a thought on the problem of education which seems apropos of the problem of resources and development and of conference discussions generally. I quote: "The problem of education is to stay close to life and not to kill the life it touches by turning it into abstractions."

You can smother this project by generalized and abstract concepts devoid of realistic references. With sharp wits and pointed comments, your efforts can have telling effects in terms of prompting us, the practicing politicians, to move at a quickened pace in legislating for measures that will bring us toward the best of all possible tomorrows. Certainly, out of it all, we shall gain a vantage point from which we may get a clearer view into the wider vistas and toward distant horizons.





*Plenary Sessions*

*Monday, October 23, 1961*



# *RESOURCES AND GROWTH IN THE CANADIAN ECONOMY*

Plenary Session

Monday October 23.

**Chairman** (Mr. KIERANS)

This Conference could not be more timely. All Canadians are disturbed by the slow rate of growth in our economy, and the inability to solve our unemployment problems. An examination of the contribution of renewable resources to our development invites similar conferences to evaluate the role of non-renewable resources, of manufacturing, financial institutions and service industries. And this is particularly true today at a time when the traditional Commonwealth patterns of our trade are changing. Canadian standards of living have been founded on the development of our natural resources both renewable and non-renewable. Some say that the resultant importation of capital and capital equipment into the profitable expansion of our primary resources has brought high wages and a one-sided development of export industries to Canada. Presumably, this is the basis for the recent comment made by the Minister of Trade and Commerce that Canadian manufacturing suffers thereby by high wages and would come off second best if exposed to international competition.

However, if we continue in the attitude of protection, I fear that this will cost Canada heavily in the future. The European trade bloc will not accept, as the Empire did, our agricultural and raw materials free, and permit us to protect the weaker sectors of the economy. Admission to the new trade bloc in groups is going to demand a total, not a partial commitment from all of us.

You have quite properly excluded consideration of human resources from the terms of reference of your various workshops because it would be otherwise impossible to accomplish the aims of the Conference. Nevertheless, I urge you to keep in mind always the legitimate and the very high aspirations of our young men and women. We must find opportunities for the younger generation to participate in the dynamic growth of Canada. They cannot be satisfied or find outlets for their skill, their initiative, and their capacity if the economy is static and if it is hampered by protectionist trade policy. Everywhere in Canada, we note this feeling of frustration among our young people. The future stability of our system of individual freedom and enterprise will be endangered if steps are not taken to harness the energies of our youth. This Conference is indeed taking place during days of great urgency.



# *Resources and Growth in the Canadian Economy*

## Plenary Session

MONDAY, October 23.

Chairman: ERIC W. KIERANS, President, Montreal Stock Exchange.

Speaker: W. T. EASTERBROOK, Chairman, Department of Political Economy, University of Toronto.

Discussants: J. J. DEUTSCH, Vice-Principal (Administration), Queen's University.

ANDRÉ RAYNAULD, Faculty of Economic Science, University of Montreal.

### Speaker (Mr. EASTERBROOK)

In a penetrating review of the Gordon Report on Canada's Economic Prospects, the complaint was made that we still lack a consistent philosophy of economic development based on natural resources. This complaint provides me with a central theme for this paper, although I have some reservations about it as a general proposition. At least we are beginning to move in this direction.

I shall begin with a few preliminary remarks about resources and growth, then take a look at resource patterns of the past, and finally, move on to various reflections on national policies, past and present, in their resource aspects.

There is a growing preoccupation in North America and elsewhere with the economics of resource use. Much of this interest is strongly policy-oriented and much of the research falls now in the realm of economic analysis: how to secure via resource development the optimum income and employment response; reference to backward and forward linkages, multiplier effects, balanced and unbalanced growth, and so on. This is all to the good, and impressive advances have been made in this direction in recent years. There is room at some point, however, to consider, even though briefly, just what past exploitation of our resource endowments means to us now; how, in other words, it affects the setting in which present-day investment decisions are made.

One or two points about resources before proceeding. First, there is a matter of definition always to be faced. There is a growing tendency to move away from conventional usage in which resources are viewed as tangible materials upon which technology works in the production of goods. We have increasing

reference now, for example, to human resources, to amenity resources, and to the position taken by some that knowledge in the form of stocks and flows of information is the most basic resource of all. Now, I see no objection to this broadening of definition—except when it tends to obscure the historical issues with which I am concerned. I am going to stay with the notion of resources as basic stuff, more or less inanimate material, and leave the larger definition for others to worry about. Similarly, the increasing substitutability of capital for natural resources is something I shall leave for others to concern themselves with. There is probably some truth in the assumption that the relative importance of natural resources in economic development declines as economy progresses, but this is to raise questions beyond the scope of this paper, and I think that it is a pretty slippery assumption anyway.

On the question of economic growth, this is an area of research that has become almost a passion in our time and I think it is a style that is likely to remain with us for a long period. We go through these fads and fashions in style but this one looks like a pretty long-period thing. And if a book is to sell now, it should have *economic growth* in its title; if it is not about *economic growth*, then put it in the subtitle but it has to be in there somewhere. And I think there is probably good reason for this emphasis. Rapid growth appears to have become a condition of survival in a world dominated by power blocs and statistical comparisons; and it is natural that, as with resources, the policy factors and the contemporary aspects should be stressed in a period in which time has become a scarce commodity. An area of research which historians once regarded as a special field is, like so many others, being taken over by the analysts



of the present. The pressures of our day account for this and the historians have no complaint so long as there is no mucking about with history.

Reference to growth itself raises a question of definition, and I am going to draw a distinction here that I will hold to very closely throughout this paper. In a long-period study, I have found it helpful to distinguish sharply between economic growth on the one hand and economic development on the other, even though in economic literature these terms are usually taken as synonymous. In what follows, economic growth has reference to progress within a more or less established institutional framework, or, in other words, to progress over the long period—that is centuries long—without any striking or any substantial transformation of the economic structure in which investment decisions are made. There may be shifts to higher and larger plateaus of growth. There may be satisfactory rates of growth based on more extensive and diversified resources, but along lines laid down in formative or early stages in an area's history. In this sense, Canada and the U.S. South, even with the changes of the past two or three decades, may properly be treated in terms of economic growth as defined.

Economic development, on the other hand, has reference to such areas as the northeast industrial complex in the United States, in which there has been a substantial structural change, a transformation of earlier lines or paths of growth into something very different. Other areas, 19th-century industrial England or 20th-century Japan, for example, provide illustrations of change in this sense of the term. One of the toughest, yet most compelling questions for the economic historian concerned with the slow-changing patterns of the long period, is why some nations or sectors remain with the basic structure of the investment channels laid down in an early period of resource expansion, one usually characterized by an emphasis on the export of resource products. There is the question of why, on the other hand, others break loose in a process of transformation to form an industrial complex, an economic heartland so to speak, which by its very progress exerts a heavy and continuing pressure on those areas which serve as hinterlands or margins of development. A good part of the answer, it seems to me, has its roots in different and contrasting patterns of resource utilization, but I will leave this aside for the moment.

One other point by way of preliminary statement, and one easily overlooked in our preoccupation with national or regional problems, is the necessity of keeping in mind that our growth over a long period has occurred within a larger North American pattern of economic change. I am not downgrading the importance of Commonwealth or European connections,

but geographic location along the secular trends in international investment and trade point to the fact that we are very much a North American nation, and to the conclusion that our national policies must be worked out very largely in this context.

So much by way of introduction; I want now to turn to a few remarks on our past patterns without getting bogged down in historical materials. There is a difficulty when we turn to the historical aspect of resource development that we have as yet no clear conception of the process of economic change. We have no scarcity of theories of change and of hypotheses to be tested, but anything like a general theory of economic growth or economic development still eludes us. The complexity of a long period with its interplay of numerous and diverse elements—the technological progress, social and political structures and attitudes, the geographic background of resource endowments, location, climate and so on—faces us at every step. And yet, if we stay for the moment with our definition of growth as distinct from development, I think we can find at least some guidelines through the jungle of factual or historical evidence. There are some historical constants to be found in the Canadian case and these can be spelled out in terms of the familiar staple approach which has done yeoman service in the study of Canadian economic history. I do not think there is any question as to the utility of this approach to at least as late as the 1930's and it is of considerable value still. Recently it has been applied with success to selected periods and sectors of U.S. development and seems to be treated as a new discovery there.

This is in essence a resource approach to economic growth. As such, it amounts to concentration on basic resources in their material or substantive formal aspect as a way of breaking into the web of historical change. The emphasis here is on the physical characteristics of a basic resource, whether it is light or bulky, luxury or common, exhaustible or renewable and so on; this opens the way for examination of the elements which enter into change as economic exploitation proceeds; i.e., the institutions which emerge with staple production in a process of interaction of technology, resources and institutional setting. The outcome of this can be examined in terms of its consequences for later stages of growth. The resource here is used as a tool of analysis which opens a way for the study of total situations. The study of historical change becomes the study of changes in resource exploitation and use, and of the consequences in terms of the structuring of growth along the lines of dominant resources. By using this theme Dr. Innis has brought unity of treatment and analysis to the study of our economic history. It has its limitations as we turn to the larger study of development as distinct from growth, but it can be

argued that in spite of the progress of the past two or three decades in the economy, it still remains an extremely useful tool to the study of Canadian growth experience. Historically, our main stages in growth can be marked out by shifts from one dominant staple or resource to another, and the changes which accompanied these major shifts can be systematically treated from this point of view.

I do not think there is any need here to trace in detail the major shifts over the long period through fish, fur, forest products, wheat, base and precious metals, hydroelectric power development and so on. These are the real stuff of change; the story has often been told. What I am concerned with is the pattern of resource exploitation that has been ours over the long period, its principal characteristics, and its implications for the present.

For brevity's sake, two salient aspects may be singled out for a closer look, when we look at this pattern of development over a long period. First, based on well-defined changes in resource development, and a direct consequence of the nature and location of our basic resources, there has been a channelling of investment along relatively narrow lines, lines which moreover have tended to deepen as the economy progressed. This concentration on a limited number of export staples is common in newly emerging areas of growth, but Canadian experience raises the question as to why we have remained so long confined within the framework laid down in the early days of continental expansion. In other words, why ours is basically a growth pattern. There have been some indications of breaking loose from this, but in the main the long-established structure still remains more or less intact.

The easy but unconvincing explanation is that such investment in a few basic resources funnels capital and initiative away from alternative lines of expansion and runs counter to a more diversified, better balanced pattern of growth. I do not think that answer will do, as it stands. There were alternative opportunities, capital was seldom in short supply—it is remarkable how quickly capital moves—nor was enterprise lacking. I think we have to take into account the large geographic setting of the North American continent of which Canada was, and still is, a northern fringe.

Now, the question, to repeat, relates to the tight or narrow channelling of investment and its implication for growth. It is true that as we move into the 19th century, signs of greater diversification are present; there was progress in early industry, the appearance of an industrial nucleus in Central Canada, changes in agriculture. But, basically, an evolving national policy led to continued concentration on staple products. And at the time, in the 1870's in particular, there were sound arguments for

this policy. Geographically, this was an enormously expensive form of expansion; the social overhead in the form of transportation and communication, and to a lesser degree defence, imposed a heavy drain on national revenue, and only by a continuing, upward spiral of return from exports in staple products could continental growth proceed. But of at least equal importance was our marginal position in the larger North American complex, because to have and to hold the northern half of the continent meant not only growth but a forced pace of growth. We were faced with pressures exerted by our neighbor to the south, and our response took the form of a defensive expansion common among areas marginal to larger and more aggressive centers of development. It is characteristic of defensive expansion to shore up, buttress established structures and outlook, to concentrate in the interests of survival on what has paid off in the past.

If we were to look to the southern margin of the continent, the Southern States, the same pattern of defensive measures may be discerned from at least the 1830's when southern nationalism first became a force. There are of course, important racial and cultural differences, but the northern and southern margins of this continent display in growth terms striking similarities nevertheless. In both, as hinterland areas, pressures from the center, economic and to some degree political, led to a pattern of persistence or growth, rather than of transformation or development; a strengthening, in other words, of structures laid down in the early formative phase of growth. Our resource base has been changed, but the structure has persisted, and I doubt that, in terms of national policy, there was any alternative to concentration on staple exports other than complete absorption in the larger unit. As a nation, we continued to concentrate on a limited number of basic resources; under some modifications this pattern is with us still. This has been referred to as a *staples trap*, and the search for a new national policy reflects an attempt, however feeble, to break out of it. Analysed in these terms, up to fairly recent years, remained in a pretty elementary level.

So much for one characteristic of our changing growth pattern. Closely linked with it is another, namely the high degree of centralization which has distinguished Canadian investment in the most strategic areas of growth. Ours has not only been a costly economy to build and maintain, but it has been one in which investment has had to proceed in the face of a wide range of uncertainties. These have been associated in part with our reliance on unpredictable and fluctuating returns from a limited number of resources, our almost extreme dependence on external markets and conditions, our vulnerability to influences beyond our borders, our exposure to

circumstances over which we have had very little control. As a consequence, investment in our leading sectors has been largely undertaken by organizations in transportation, finance and industry strong enough to cope with the prevailing uncertainties with some hope of reasonable returns. In other words, big enterprise backed by strong central government action has been a characteristic of Canadian growth as we moved through a sequence of shifts marked out by changes in the resources exploited. This element of centralization, of bigness in organization is, of course, common to many present-day economies, certainly the more advanced ones, but it has been our lot over a very long period, and it is closely associated with investment channels dug in the past.

These two salient aspects of Canadian growth—narrow channelling of investment and centralized organization—are, in turn, closely related to the long-range planning we usually identify as national policy. We can, in fact, review Canadian history in terms of a succession of national policies—first French, then British, finally Canadian—in which these characteristics or historical constants may be discerned. The strategy of investment in basic resources has been a dominant theme; these resources have played their role as growing points, and attitudes to resource exploitation have shaped our national policies at every turn.

Putting the matter in these terms is to raise a question to which it is very difficult to provide a conclusive answer. Is there not something to be said for a continuation of policies of concentration on export of resource products, of heavy and direct reliance on our resource base to enable us to continue our role as a leading nation? Until well into this century this tactic appears to have paid off, if rates of change and rising per capita income are our criteria of performance. I doubt that over our history there has been any real alternative to a staple policy other than integration with regions to the south. Have we a choice now? It is clear that ours is a rather set pattern of growth, that it has evolved over a long period, that it cannot be altered without substantial and possibly painful adjustments based on a strenuous realignment of the national policies of the past. This is to raise a complex issue and I shall do no more than offer a few reflections based on the study of our growth experience of the past, remote and recent.

Returning to this matter of choice for a moment, if recent and disturbing trends in international trade are as significant as they appear to be, and if greater autonomy in control of our resources is now a primary national objective, then there would seem to be no alternative to a policy of redirection of former lines of growth. There is another circumstance which points to a realignment of policy—that is, the increas-

ing evidence that persistence of the growth pattern of the past is likely to impose a ceiling on future growth and sharp limitations on our ability over the next few decades to absorb increased population and to step up our employment potential. It is difficult to escape the conviction that we must search for an alternative to this historically set pattern which imposes limits on variety and diversity and leaves us as sensitive as we have been to external influences.

How to achieve transformation or development, to move along beyond more or less fixed lines of growth to a more autonomous form of development—in other words, how to break out of what I referred to as a pattern of persistence—is very much our problem. And this is easier to raise than to solve. But this much seems clear: that any resort to defensive, restrictionist protection of the structure as it stands, with somehow the hope that it will generate its own economic momentum must have, as a consequence, a further and possibly disastrous slowing down in the rate of growth. It is equally clear that the old national policy, admirable as it was, has served its purpose, it did build a nation but it has had its day, and on the whole a good one.

Well, there are various lines of attack on this problem of shifting from growth to development or transformation. One is more properly the province of my co-speakers, and although I can do no more than refer to it, I know of no more significant area of research in our time. I have in mind such advances as at present in input-output analysis, examination of various economic resources and sectors from the standpoint of their potential to promote development and the stimulus they provide to domestic production from natural resource to final product. In recent years, this selective treatment of resources and sectors has taken us a long step forward in the attempt to evaluate our resource endowments in terms of their contributions to economic development as distinct from growth. This is backed by recent work of a statistical or quantitative sort on the significance of specific resources to rates and levels of growth in various regions.

Comparative study of economic change in the U.S. South and the U.S. West along these lines, for example, raises points of interest to those concerned with the Canadian case. In spite of the greater wealth and variety of resources, the South has lagged considerably behind the West over a long period. The conventional explanation has been that southern institutions were such as to discourage economic initiative and to retard investment, to bring a level of per capita income lower than the national average and so on. More recently, however, closer examination of resource differences in these two regions has yielded a more convincing explanation. Douglas North in a recent study of U.S. economic growth,



1790-1860 (a somewhat restricted version of the staples thesis), distinguishes between the successful economy and the unsuccessful economy. The first develops because exploitation of an export base or commodity leads to a broadening of the export market and, more important, a growth in the size of the domestic market. On the other hand you have the unsuccessful economy where the staples trade leads at best to a very limited change along these lines and where income flows out of the economy, with very little more than expansion of the export industry as a result.

In the American South, the cultivation of the great staple cotton with its enormous comparative advantage, its unfortunate income distribution effects, and its lack of stimulus to urbanization resulted in retarded growth of domestic market and the inability to move at any stage from growth to development, as I have defined these terms. The success areas are those of the American West and Northeast where growing income from export sectors resulted in expansion and diversification of the economies of these regions. Production of a greater variety of staples exports here went hand in hand with a broader and more favorable income distribution, emergence of a multiplicity of smaller urban centers and towns in which residentiary industry took root.

This view of basic resources as growing points, whose production results in very different patterns of economic change, has much in common with that of resource theorists. In their emphasis on the selective treatment of resources—and that is where the greatest advances are being made—and in relating resources so closely to economic growth along highly specific lines, the theoretician and the statistical historian seem to me to be pointing a way to something like a consistent philosophy of economic development based on natural resources.

There is another line of attack and I conclude with these few comments in a more specifically historical vein. This calls less for selective treatment of various resources and their growth potential than consideration of contrasting historical patterns of growth and development. This is not as closely identified with the resource factors as the foregoing, although resources remain the basic stuff, nevertheless. But it is with the larger setting in which investment in resources goes on that I am concerned at this point. I have mentioned that on this continent we have a clear-cut division between patterns of persistence of growth, those of Canada and the South, and a pattern of transformation, in this case the Northeast United States and its integrated West. Resource considerations help to explain these contrasts, but something more than this is needed if we put the matter in terms of the search for new national policies. I can

do no more than note in a summary way some of the reasons for these contrasts and their implication for policy.

The most striking contrast between cases of development and those of growth relates to the appearance of a strong internal momentum, or more pretentiously an internal dynamic, in the transformation areas, and the comparative weakness of this momentum or internal drive in what I have referred to as marginal areas of continental development. Differences in resource endowment and use help to explain these contrasts but they do not tell us the whole story. I think we have to take into account structural differences and investment tactics or strategies which have merged in the course of economic change. Let me turn to the development story, first in North America, and this in terms of this larger pattern of North American change. If we consider the historical case of the northeast sector of the continent, the most impressive feature of the early phase of growth is the seeding of numerous centers of enterprise or initiative, first in the 17th and 18th centuries along the Atlantic seaboard, e.g., Boston, Newport, Philadelphia, Charleston, New York and later on this same seeding process occurred in the Trans-Appalachian West. The early seaboard centers were held back from easy penetration of the continental interior by the barrier of the Appalachians. The seaboard centers of New England, held back from easy penetration of the continental interior, but blessed with a various and diverse resource base, emerged as highly aggressive entities, competing actively among themselves in maritime trade, and later, and still much more actively, in their attempt to build margins or hinterlands of their own in North America. There were here strong internal pressures for change as the early centers reached out by road and turnpike, river, canal or early railway for areas of control or new margins to be incorporated in a larger regional complex as sources of supply, as markets, and as spheres of investment. Growing up on the periphery of the British Imperial system, they broke loose to build margins of their own in North America.

These early centers may be seen as nuclei of enterprise, closely tied to resources and trade, which in their rivalries, their local "boosterism," so to speak, provided the dynamic which brought transformation and the prospect of new levels of development. In the first quarter of the 19th century, this process was repeated; there began the push to new hinterlands in the Midwest, new margins of continental expansion, and as a consequence, new centers of enterprise: Pittsburgh, Louisville, Cincinnati, St. Louis and later, of course, the Lake Ports with Chicago as leading contender. These rose to compete aggressively among themselves and against older centers for a place in the sun.

Now, this is obviously a long and involved story and I can touch only on the high spots. The point here is that this did not happen on the northern and southern fringes of the continent—Canada and South. Here, the early centers (there are few of them) were caught up almost from the beginning in a continental system based on a single export staple in a structure marked by centralized control, by the absence of numerous and rival centers competing for new areas of control. These were systems of dominant center, weak margins and a narrow channelling of investment which brought growth but limited development. On this matter of urban centers, I was greatly impressed by Mr. Gertler's paper on the possibilities of the urban-centered region as a focus for strategies of growth, although I am inclined to put less emphasis on regional planning than on national development.

What has all this to do with Canadian resource development and the search for new national policies? Until recently, I think, not very much. But the changes of the past two or three decades, it seems to me, bring hope of breaking loose from the historical framework or pattern which has had its day. Recent resource discoveries in the Maritimes, the west, still more recently the north, and in Newfoundland, backed by striking technological advances in exploitation and transportation, suggest the possibility at least of a transformation hitherto beyond our reach. The more highly industrialized centers of the St. Lawrence region have already moved part-way in this direction, but before the emergence of new and stronger centers of enterprise on former hinterlands, there could be little hope of breaking out of a long-established pattern of dominant-center complex and weak and dependent margins. This is at least a possibility now, and with it the prospect of stronger internal stimuli to Canadian economic change, to expansion of the domestic market and for that matter to greater economic autonomy than we now have. It is obvious that this cannot come as a matter of course, but the possibility of what I referred to as transformation or development seems to me to be here, and for the first time. This involves long range planning, decades of it. So long as we do not fall into the rut of defensive nationalism, of increasing restraint on trade and on the volume of external investments, there is little to prevent our working toward an extensive rechannelling of investment and a broader base of resource use.

Looking back over this paper I have been discussing national policies at two levels, one with reference to the difficulties present in our marginal position on this continent, the other relating to the possibility of meeting these difficulties by inducing in Canada the lively interplay of established centers and newly developing margins which has been the distinguish-

ing feature of various areas that have moved into their development phase in the past. For this, we have the resource base, the analytical tools, and I hope, sense of perspective. We may, and probably will, remain satisfied with the growth pattern for a time, but I have a hunch that problems of secular unemployment will eventually force our hand. If I seem to be unduly optimistic about our ability to move from growth to development, this probably indicates that historians have their dreams and their visions too.

#### **Discussant (Mr. DEUTSCH)**

How to achieve a satisfactory rate of economic growth is one of the leading preoccupations of Canadians at the present time. Over the past four or five years, the rate of expansion of economic output has fallen behind the growth in our population, and there has been a decline in the average per capita production. This situation is all the more disconcerting because it follows immediately upon a decade of growth, 1946 to 1956, which historically was one of the outstanding periods of Canadian development.

In recent months, there has been an encouraging degree of recovery in economic activity. The question in our minds is: Will this recovery be sufficiently strong and lasting to overcome fully the slack in capacities and employment, or will the recovery level out again so as to leave a hard core of unemployment to persist further into the future? In other words, is the Canadian economy once more confronted, as it has been so often in the past, with secular and deep-seated problems of growth? Or, are we on the verge of a new highroad of development?

Professor Easterbrook in his basic paper has examined this question from the standpoint of historical perspective. With his great talents as an economic historian he has presented an analysis of the underlying forces and circumstances which have shaped the Canadian economy and its prospects. He has concluded that in the context of the North American continent, Canada has been a marginal area. How else can one explain the striking disparity in the economic development of Canada as compared with the United States, both of which sprang from similar historical beginnings? Professor Easterbrook has pointed out the contrast between the relatively narrow basis of Canadian development and the complex interrelated structure of the United States economy. In Canada, the process of growth has depended primarily upon the possibility of exploiting and exporting relatively few extensive natural resources; whereas, in the United States the development has proceeded more intensely in a cumulative and self-reinforcing manner within a domestic framework.

One of our basic problems is to determine why this



difference exists. This contrast arises, I believe, out of certain problems and limitations which are characteristic of the Canadian economy. Our resources are large, rich and reasonably diversified. However, they are of no value unless they can be extracted economically, transported to markets efficiently, and sold profitably.

In Canada, each of these requirements has always confronted us with special difficulties. Frequently, all three of these requirements have had to be satisfied simultaneously before success could be achieved. Consequently there have been long periods of waiting and long periods of slow development. On the other hand, when the conditions could be fulfilled, there were sudden surges of growth and intense periods of boom. For example, the settlement of our great Prairie Region was not possible until the development of the transcontinental railway, the expansion of markets for food grains overseas and the perfection of methods for growing wheat under severely restrictive moisture and climatic conditions.

Now this was a far more difficult process than the gradual westward movement of settlement from the east coast of the United States. The utilization of our great resources of water power had to wait until a way could be found to transmit electricity over long distances. The exploitation of the huge timber resources of the west coast could not be undertaken on a large scale until the construction of the Panama Canal. The development of gas and oil in Western Canada, in the middle of the continent, is in reality dependent upon the efficient building of large diameter pipelines. And so one could go on.

The technological breakthroughs which have made these developments possible in most cases, in order to be effective, have had to be accompanied by huge investments of capital and by the availability of large markets. The creation of wealth, for instance, from the forest resources of the Pre-Cambrian Shield was dependent upon the opening of the United States market for newsprint and upon heavy investment. More recently, the same has been true for iron ore in northern Quebec. In the future the tar sands, the mineral resources of the Northwest Territories and the Arctic Islands will yield their riches only to new technology, to immense new investment and to new markets.

This brief recital will serve to indicate the sporadic and widely scattered nature of Canadian economic development both in space and in time. This kind of development, governed so largely by technology and external influences is not a favorable basis for the cumulative and self-generating process of massive growth—such as has taken place in the United States.

Professor Easterbrook concludes his paper with

the statement: "We may, and probably will, remain satisfied with the growth pattern for a time, but I have a hunch that problems of secular unemployment will eventually force our hand." It is my hunch, that both the nature and the speed of growth in the future will be determined more largely, as already has been said, by our human resources than by our natural resources, important as these are. The rate of advance in scientific knowledge and technological knowledge is now sufficiently rapid to greatly reduce the handicaps we have suffered from physical barriers and climatic rigors, and to greatly increase the possibilities for converting crude raw materials into high-value products. The extent to which we take advantage of these new opportunities will depend basically upon the proficiency of our educational system in turning out the necessary human skills, the energy which we are prepared to devote to research into our special problems and the wisdom with which we shall manage our monetary, fiscal and trade affairs. These are going to be of far greater importance in achieving the kind of development in the future of which Professor Easterbrook has spoken.

Many years ago a famous observer of the Canadian scene said that Canada is a country rich in resources, but poor in policy. The greatest task we have today is to add a rich policy of human skill and foresight to a great bounty of nature.

#### Discusant (Mr. RAYNAULD) \*

My comments on the paper presented by Professor Easterbrook are divided into two parts; in the first part, I present a few general observations on the relations between productive resources and economic development; in the second part, I suggest a few preliminary conditions to the new wave of transformation foreseen for Canada by the author.

The relationship between resources and economic growth is substantially more complex than appears from a glimpse at developments. Were we to give to the word *resource* a sufficiently extensive meaning to include all the factors which contribute to the production of goods, taking into account the countless possible combinations, we would easily establish a direct relationship between resources and growth. What is true for the aggregate of resources does not, however, hold for individual classes. The outstanding value of a mineral deposit for example, does not necessarily lead to the wealth of a country. Indeed, an increase in productivity and income is defined by a reduction of resources used in relation to the manufactured product, and not *vice versa*. The exploitation of certain resources may even impoverish the country. We know of some such examples.

Therefore, in short, the analysis of the contribution

\* Translated from French.

of natural resources to general prosperity, which is the theme of this Conference, cannot be based on oversimplified assumptions. It is rather a very difficult problem. There is, indeed, no simple and unique relationship between the abundance and availability of various productive resources on one hand, and the relative costs of production and the means of development on the other. In analyzing international trade, we find explicit reference to certain relationships between the productive factors which reflect the resources pattern and a country's specialization in export products. The basic principle underlying such specialization is conditioned by so many factors that the forecasting value of this type of analysis is practically worthless. At least, it has the advantage of showing that conclusions rapidly arrived at are misleading.

We know for certain that production must be adapted to the resources of a country. But this is perhaps not a very significant statement. Production costs will depend not only on the relative abundance of the factors but also on the volume of production. Production costs depend upon the efficiency of the total decision-making process of the enterprise. On the other hand, the world demand for the resources of a country is constantly changing under the influence of both the tastes of consumers and technological changes. What was yesterday an abundant resource becomes today a scarce one, and *vice versa*. Finally, the factorial intensity of the goods produced, or in simpler terms, the quantities of the various inputs used to manufacture a product, also change according to production volume and price relationships, to such a point that on the whole it is impossible to closely associate a particular resource with a product, and it is impossible to associate a given aggregate of resources in a country with a corresponding economic structure. It is impossible to project into the future a given type of development from an inventory of the natural resources available, no matter how thorough it is.

Are the relationships between resources and production more specific and more characteristic in the staple theory of development so dear to many Canadians? At first sight, it would seem so, for long-term economic evolution is neatly explained by reference to conditions of supply and demand for certain basic products. We also heard Professor Easterbrook mention this concept and point out Canada's perseverance in maintaining an elementary type of development.

I maintain, nevertheless, that the staple approach does not increase our knowledge of the difficulties facing us any more than does the comparative cost analysis. Without underestimating in any way the originality of the theory, I think it is above all an attractive historical illustration, but an illustration

nevertheless, of the traditional theory of comparative cost and of its projection in terms of demand and technological changes. The type of specialization which has taken place in Canada relative to the industrial countries of the world seems to be an almost exact image of the type of economic growth which Ricardo must have had in mind; namely, a sustained growth, the origin of which depends on intensive specialization in certain industries or special products and of considerable dependence on external trade.

Of course this image is much too general. In recent years, we have started to define more precise relationships than those between resources and growth. Professor Easterbrook has referred to the inter-industry studies by which one measures the direct impact which a particular industry may exercise upon the economy as a whole. This influence is reflected in the intensity of domestic flows established around such dynamic centers as the export industries and by the flow of revenues which they induce. Certain exporting industries stimulate and diffuse growth in the domestic area while others remain what we may call "enclaves" or small islands of development. It is with the help of new concepts like these that it is possible to estimate with increasing accuracy the contribution of resources to the economic development of a country as a whole.

Let us now consider the second group of observations. To Professor Easterbrook, Canada is an economic zone located on the periphery of dynamic development centers in the eastern and central United States. By considering Canada in this manner as a particular margin of a North American whole, the author revives an idea already familiar to Innis. The important addition he gives to the initial model depends upon the respective characteristics and attributes of the centers and of the peripheric zones, as well as upon the interactions between the margins and the centers. The latter at first give rise to peripheric development zones with a view to their own expansion. The margins remain satellites of the center until they in turn succeed in accumulating a so-called security zone for their investments as new development regions spread around them rather than around the previous center. The peripheric area would essentially have the characteristics of a resistant zone which seeks security or protection against the dynamism of the centers through the perpetuation of the existing patterns and conventional structures. The predominant spirit at the center would be a spirit of innovation and change, and at the margins, a spirit of conservation and persistence.

Professor Easterbrook feels that Canada has remained so far a zone of peripheric growth, but that some signs are appearing which should lead to a structural transformation and internal dynamism

typical of true development centers, in the sense given by the author.

I cannot share this optimism without reservation, possibly because of more limited professional perspectives. The only encouraging sign that I foresee is that the progressive deterioration of the situation over the past decade may encourage more and more Canadians to think and may finally force us to make the necessary decisions.

Professor Easterbrook asks the question: "How do we break out of this pattern of persistence which may lead us to an impasse?" I am foolhardy enough to try to give an answer. In my opinion, it is by launching a determined program of economic activities at the various government levels; to have public economic planning take precedence over private economic planning. It is now just as essential to establish a coherent policy of resource development as it is to develop adequate monetary, fiscal or social policies. Like the Netherlands, Sweden and France, the Canadian government should, in close co-operation with the provincial governments, formulate appropriate over-all public policy and implement a detailed and continuous long run program of activities to be undertaken by private enterprise as well as by itself.

It is generally agreed that in Canada, because of a relatively limited and diffuse domestic market, and also because of technological progress, the units of efficient production are so large that all their decisions are of direct national concern. At the same time, we can no longer assume, as we have done so far, that the distribution of investments among the different sectors of the economy is unrelated to long-term growth. The public interest, which some people measure on the basis of the social marginal-

productivity concept, must be substituted for the private cost-benefit approach when they come into conflict. We have already seen, for instance, that certain industries more than others are capable of stimulating economic growth. There is no doubt that such ability is of primary importance for the area or the country involved.

Furthermore, from the viewpoint of society, one can no longer be indifferent as to whether investments are made by private enterprise or by government because these two types of investment are tied to certain specific services. If some of these are in short supply, they depress the demand for other complementary services. If one could assume that the private sector should be able to invest in any field subject to the expected returns on capital as is generally said, there would be no problem. But this assumption is not valid. Education, health, communication and recreation are services of a collective nature which require increased economic participation by the government. Who would question that these are the very services for which the needs are most keenly felt? But because of the relations between public and private services, it is no longer possible or advisable, in my opinion, for the state to spend or participate in the economic sphere in an undisciplined fashion, unguided by comprehensive objectives and policies applying to the whole economy.

This problem should be dealt with at greater length but these observations may suffice. The essential point is to realize that the rules of economic planning should be changed if we wish to see changes in Canadian economic structures. Only when this is achieved will the hopes of Professor Easterbrook become reality.





# *FACTORS CONDITIONING GROWTH*

Plenary Session

Monday, October 23.

Chairman: RODERICK HAIG-BROWN,  
Magistrate, Campbell River, B.C.

Physical Factors

Scientific and Technological Factors

Administrative and Jurisdictional Factors

Economic Factors





# Physical Factors

Speaker: F. KENNETH HARE, Chairman, Department of Geography and Meteorology, McGill University.

Discussants: N. L. NICHOLSON, Director, Geographical Branch, Canada Department of Mines and Technical Surveys.

PIERRE DAGENAIS, Faculty of Geography, University of Montreal.

## Speaker (Mr. HARE)

I am going to start by taking two extremely simple aspects of Canada's physical characteristics, aspects that have conditioned our economic growth without question, but which are completely naive. They do not require elaborate discussion, they do not require elaborate apparatus to demonstrate, and I am going to try and draw some morals from these circumstances as regards the pattern of our economic development. These two aspects are simply size and coldness, about which I suppose we are all authorities, and I am going to start with size.

Now, it is obvious to all that Canada is too big—especially to those of you, I imagine, who have just come across from Vancouver. Only about 15 per cent of her surface is at present supporting any economic activity, realistically defined. And perhaps a further 15 per cent is in the early stages of economic pregnancy. The remaining 70 per cent (or 85 per cent in terms of *this* year's profit and loss accounting) simply represent added transportation costs to the shipper, and wasted hours to the traveller. The integrated boredom of all Canada's transcontinental passengers over the years since the C.P.R. went through is an appalling phenomenon. Even by fast jet aircraft, it takes longer to go from Montreal to Vancouver than it does to go to London across the entirely useless Atlantic. Halifax, N.S., on our Atlantic seaboard, is as close to Bogota, Colombia, as it is to Vancouver. Our entire national economy has to bear the utterly unreasonable cost of bridging these useless miles, with consequences painfully familiar to the Prairie wheat farmer, or the Cape Breton coal miner and metal and steel worker. And, as if our east-west girth were not enough, the northern coast of Ellesmere Island is as far from Montreal as is Vancouver, and the terrain in between is not 85, but 99 per cent useless.

Space, then, I would say, is our greatest single negative asset; we do our work in an oasis set in a desert of distance. Transportation and its costs are,

directly or indirectly, our foremost political problem. I really ought to leave the next sentence out, incidentally, but I am going to go ahead—I see one or two people in the audience who may not enjoy this. I was going to say that Mr. Donald Gordon is a more important personage than are several Cabinet Ministers, and Mr. Crump is in no way behind. No American railroader can hold a candle, I suggest, to either Mr. Crump or Mr. Gordon. It is often accounted a miracle that Canada was successfully created as a political unit, when each of her constituent geographical regions adjoins a larger and more prosperous U. S. equivalent. It is indeed true that the natural lines of the continent run north-south, and that Canada is wholly artificial in conception. But then, of course, so is the United States, and for precisely the same reasons. In both countries the lines of heavy traffic run east-west, and they cross from region to region. This is as it should be because a country so founded is likely to have a good, varied resource base.

But in one vital respect the United States differs from its larger cousin. It is far more densely populated and far more fully developed, its lines of communication can rely on some profitable way freight. There is nothing in the whole U.S. railway system quite like Capreol-Winnipeg on the C.N.R., or Sudbury-Winnipeg on the C.P.R.

The Vice-Principal of McGill University, Dr. David Thomson, explains the presence of two railways north of Lake Superior, instead of one, along the following rational lines. Early in the history of Confederation, he explained to a visiting group of distinguished people at McGill, the people of Nova Scotia discovered an insatiable appetite for apples of the Okanagan Valley, and at about the same time, the inhabitants of British Columbia discovered an equally insatiable appetite for the apples of the Annapolis Valley, and it proved to be impossible to grow any kind of apples in between. Accordingly, the Canadian Pacific Railway was built to carry Nova Scotian apples to Van-

couver, and the Canadian National Railway was built to carry British Columbian apples to Nova Scotia, and this is the only rational reason why we have two railways north of Lake Superior.

I might lightheartedly suggest, therefore, that one of the most useful forms of research in which the federal government might engage would be a project to shrink our territories—a form of geographical headshrinking. We shall have to be careful, of course, not to go too far, or Prince Edward Island will disappear entirely—and Montreal will be within sight of Toronto, which Heaven forbid. We shall also have to distort the map in such a way as to preserve intact the area of our great catchment basins, whose very bigness accounts for the superlative power supply on which we increasingly depend.

So much for size. It is equally obvious, I think, that Canada is also too cold. We have a nightmare climate; latitude for latitude our winters are among the world's coldest, if we omit those fortunate square miles west of the British Columbia Coast Range. Even in southernmost Ontario, where the summers are subtropical, frost can occur in May and September, and there is no point east of the Coast Range with mean January temperatures above freezing. If you recall that Montreal is in the latitude of Bordeaux, and that the bitter cold of the Labrador winter occurs in the same latitude as the British Isles, you will get some measure of the injustice meted out to us by Providence.

We have, of course, adapted ourselves to this condition. The short summer microthermal climates with about half the year above freezing, are the home of the world's dense boreal forests, composed of spruce, fir, larch and pine. This belt runs across Canada from Northern British Columbia and the Prairie Provinces to Northern Ontario, to the Lake St. John country, and to Newfoundland, with islands further south on the high ground of the Maritimes. For much of this distance the belt coincides with rugged terrain, glacially roughened stream channels, and hence abundant power potential; the pulp and paper industry, on which our balance of payments depends so heavily, is the result (imbalance if payments would perhaps be a better expression). Similarly our Prairie agriculture with its hard spring wheat is a sensible and highly profitable adaptation to specialized cold environment, in this case the subhumid microthermal climates that in nature support a grassland vegetation.

We must, therefore, recognize that we owe our characteristic economic activities to our particular position *vis-à-vis* the circumpolar climatic zones. I was struck this morning listening to Dr. Easterbrook by the fact that he said we had to consider our economy in a continental context as a North American nation, whereas as a geographer, I think of Canada

as a northern nation, akin to Scandinavia and to Russia. I am not sure that I am wrong and he is right. Our natural kinship is with the northern countries, where you can find almost identical environments. In other words, on the other side of the Atlantic, and in Russia, you find a country even more Canadian than Canada is in its range of physical challenges and physical circumstances. As a matter of fact, had I gone ahead and given the scientific paper that I originally thought of giving you, it would all have been essentially concerned with this point, but since I am talking by moralizing, I shall say no more about it. I would like to say, to continue with my text, that most of the physical problems that we think of as typically Canadian, also confront the Russians and the Scandinavians and, thanks to Alaska, are also not unknown to the Americans. Our land is in no sense unique.

Cold temperatures may provide us with certain economic opportunities; but, of course, they are also important added sources of cost. In our personal budgets, they imply a large outlay on specialized clothing, from tropical attire in July to polar in January. No such necessity confronts the British, for whom one suit of clothes may well suffice. Our homes, and our industrial plants, have to be heated from September until May (even longer in some areas), for the comfort of ourselves and of our manual workers. The natural waters that we use in industrial plants enter those plants at very low temperatures for much of the year, and have to be heated (unless they are being used as coolants, in which case, of course, we gain). Our building trades and our transportation companies, all face a severe winter problem—and their prices show it. Not least is seasonal unemployment; for much of the year we are forced to carry on our backs the burden of extra unemployed.

I look in vain, ladies and gentlemen, in the pages of the economic journals for a science of low temperature economics—we have low temperature physics, we have low temperature climatology; we don't have any low temperature economics. Yet it is quite apparent that the northern countries, all of them, face problems in these directions, and it is quite obvious that one could work out a rationally conceived system of economics or economic geography of the northern world, and I think make some sense out of it. But, this is the kind of thing economists are not interested in, so we never see it.

Nowhere do we see these forces of cold adaptation at work more clearly than in the north, especially in outdoor activities. Take, for example, the simple and necessary device of welding. If you weld at low temperatures, you leave hidden in the product a built-in stress which will sooner or later cause failure. You can get around this by preheating the weld path. This presupposes a source of heat, and slows down the



welder. Hence it adds to cost. His visor will frost up from his breath, and he will be unable to see. So he has to use an anti-hoarfrost polish and incurs more costs—he has to do some cursing as well and that adds still more to his time. Or, consider the electrician, much of whose work cannot be done without naked or very thinly-gloved fingers. He can work for only a few minutes before stopping to warm them up. Once again, more cost. Some of the world's nastiest jobs are especially reserved for Canadians.

I have isolated the two topics of size and cold merely to illustrate my one and only thesis—I say in the text my “main thesis,” but I can’t honestly pretend there is more than one idea in all of it. I really feel that we are not yet fully equipped to cope masterfully with our physical problems. In many ways, I believe we fall short of best performance. Economically this must mean, of course, added cost. Our product sells for more than it should and loses its competitive attractiveness. So, I propose to ask the question (not with respect to size, which is perhaps too naive) what do we do to overcome the cold?

Well, our favorite solution is to pretend that the cold does not exist, or is exaggerated. The winter garments of the Montrealers are really comic; the men freeze their ears in Homburg hats, the women freeze their legs in nylons. We are prepared to be acutely uncomfortable and even to suffer local frostbite, in order to comply with fashion norms established in London or Paris. This is a long-standing Canadian joke, but laughing at it has not changed our ways, because we still do the same things. There are no more fur hats in Montreal now than there were when I first arrived here sixteen years ago. A joke, yes; but it ceases to be a joke when it is reproduced in the garments of industrial workers in the North. The Armed Forces of Canada and of the United States have, at great expense, perfected lightweight and highly efficient arctic clothing, of a sort that allows unimpeded outdoor work. There is a large volume of official know-how on how to clothe men for comfort, efficiency and safety. But a visit to almost any construction site in the North shows the working force clad in a fantastic cocktail of clumsy, ineffective and cheap clothes that do nothing like as good a job. If you ask why employers do not avail themselves of scientifically designed cold weather clothes, you get a wide variety of discouraging replies. I have actually done this, and I can quote you a few from my personal scrapbook: “It is none of our business what they wear.” “The expense would be too great.” “The unions would not stand for it.” And to quote from a pitworker: “I will wear what it suits me to wear.” The actual facts, of course, are that in most cases neither management nor the working force knows about the existence of good arctic clothing. A friend reported to me that even some of the DEW line con-

struction gangs, under military contract, were clothed by themselves at supermarkets in New Jersey before they left for the North.

A similar situation exists as far as housing is concerned. The suburban house in Montreal, Winnipeg and Toronto is not without its faults; California style carports appear, and picture windows are fitted facing the northeast. Fashion plays a part here also. But in the middle and further North, the suburban villa becomes utterly inadequate; its aerodynamics are such that snow piles up to the eaves, blows in through the keyhole and under storm windows; the picture window may look out across a dull and uninviting tundra. In Finland, Norway and Sweden, architects have designed houses that are shaped and sited so as to minimize drifting, and which look like northern houses appropriate to their surroundings. We might suppose that we should make a similar effort. On the contrary, we build ordinary suburban houses, picture windows and all, and damn the consequences! And why do we do this? Because, I am told by some of my industrial friends who have done just this, the worker wants to feel that he is back in Notre-Dame de Grâce. Even though he does not live there, he wants to pretend, in short, that he is not in the North; and above all, his wife wants to pretend she is not in the North.

There is a psychological block involved. All this suggests that in this one segment of our economic development, or perhaps I should say economic growth following Dr. Easterbrook this morning, we are not firing on all eight cylinders, not by a long way, through sheer technological torpidity, to coin a phrase—and I wonder to what extent this is true across the whole resource field. (I will come back to that in a minute.) I am sure it is true of northern development.

Are there any more encouraging signs? Quite definitely I think there are, especially in federal government laboratories and offices. I have no doubt the same is true of many of the provinces but they do not have quite the northern complexion that the federal government does in its resources work.

Take permafrost as an example. Permanently frozen ground in Canada extends north from a line from the middle Mackenzie, via northernmost Ontario to central Labrador-Ungava. The settlements of the Mackenzie and Yukon country are built on this very chancy foundation, and in a few places we have mined through it. The entire question of permafrost technology is one for which much research is needed. As I presume you all know, this is an area in which the Russians have done most of the pioneer work. This has taken many forms, essentially of two kinds, geophysical work on the thermal properties and energy balance of the permafrost on the one hand, and engineering research on the design of structures on the other.



In Canada, we did nothing about this until after World War II; our drunken villages with houses at all sorts of angles—but no right angles—were considered to be a quaint, but inevitable consequence of northern development. Fortunately, all were not acquiescent; a few engineers, civil and military, began to redesign structures so that they would be stable on permafrost; as long ago as 1929, the Hudson's Bay Railway, of course, had this problem, and the Russian ideas have begun to filter through to us. The National Research Council, through its Division of Building Research, has built up admirable facilities for permafrost research of all kinds. The Geographical Branch of the Department of Mines and Technical Surveys has been able to make a start in the systematic study of permafrost and patterned ground phenomena; and there are many places where work along these lines has now been initiated.

The National Research Council and the Mines Branch and others do many other praiseworthy things in the same direction—the properties of low temperature lubricants, for example, welding procedures and a host of others. My impression is, however, that relative to the problem, without exception, these activities are on a restricted budget, and it seems to me to be quite obvious that it gets through to the industrial consumer remarkably slowly. I also notice, what all of us must notice, that the industrial consumer respects most of all his own painful experience. He usually has to learn, to make his own mistakes; generally speaking they become his trade secret. Not unnaturally he does not want to communicate them to his competitor, and so, we build up a national storehouse of skill in these directions pretty slowly.

Well, I do not know, quite frankly, to what extent this little single piece of moralizing bears on our resource policy at large. I presume that this is your business not mine; I am not a resource man. I will not presume to say that the same technological 85 per cent efficiency, rather than 100 per cent efficiency, is valid across other aspects of resource development. But the fact that it is true in the North, which is perhaps our toughest economic frontier, leaves me to suppose that probably there is a similar slack elsewhere, and that this is one of the things that anyone considering the physical conditions affecting our growth ought to say, and I have said it.

I would like to close on a radically different note. In spite of listening to the economists this morning, I still feel I am going to go ahead and say this, even if I have my ears boxed. I propose to question the exclusion of man himself as a resource from this Conference. It has been part of the mystique of North American life that we owe our wealth to the development of natural resources. Is it not what the economist says? He does not put it as clearly as that, but it is what the rest of us say. "If our economy sags,"

this mystique implies, "it is because we are doing a bad job of resource development." The fact that you are here, with all ten provinces behind you, may have something to do with the fact that we have a lot of unemployed and that the number increases every year. In other words, economic growth has some necessary connection with natural resources, but the facts of present-day economic life fail to confirm this. Very rapid economic growth is at present characteristic of most of the European Common Market countries, and of Japan, which have a far poorer resource base than does Canada. In 1961, in other words, it is perfectly possible to achieve full employment and a high level of economic growth in the total absence of the kind of resource wealth that we have for many years prided ourselves upon. What they are doing is developing the ultimate resource, human skill, which they have in abundance.

It seems to me that we shall solve our problems only when we do two things: first, to give *primary* place to the development of skills, that is to education. Easily our most vital renewable resource is our annual crop of babies, provided that we train them properly. And quite hard-headed economists tell us that the return on investment in education these days exceeds the return on investment in physical plant, even of the most efficient. The second thing: (I am very much under the influence of Galbraith, largely because my economist friends at McGill are obviously so suspicious of him; hence I read Galbraith and talk about him all the time), it seems to me that we have to begin larger scale investment in our neglected cities, in institutions, in roads and expressways, in hospitals, schools, universities, museums, concert halls and a thousand and one things that Canada lacks. In other words, we need intensified investment in the public domain.

Neither of these two prescriptions has anything to do with the declared objectives of this Conference, or indeed with the declared objectives of this particular address. Nevertheless, I feel certain that the organizers have similar thoughts in their minds. By all means, let us consider the future of our renewable resources. But let us not imagine that any kind of natural-resource-dominated economy will necessarily give us a lasting solution to economic difficulties. That can only come, it seems to me as a complete amateur, from an immense diversification of our national life, especially of our cities, and a shift of emphasis toward the development of new skills—in other words, of better-rounded men, with better-skilled minds, and with the host of new wants that have to be satisfied. I am not preaching, gentlemen, that you should go out of business in the field of resource development. I am in it myself in another way. I am, however, doubting whether this

Conference or any resource-dominated policy will necessarily solve all our economic difficulties.

**Discussant (Mr. NICHOLSON)**

It has been well for us to consider two of the major physical factors which have influenced the development of Canada: size and climate. The implications of Canada's great size are manifold. When considered in terms of our relatively small population, for instance, largeness means sparseness, and this very often produces a wasteful economy which labors under the delusion that where there is plenty of space, there is little or no need to care. For a very long time, it prompted an extensive, not intensive, use of the land that preserved the relative isolation of people and inhibited conservation practices.

Canada has paid a lot for its size. On the other hand, its size may be beginning to pay off. The world has reached the stage when there is a real demand for underdeveloped resources. World population is increasing at the rate of tens of millions a year. These people have to have food. Many countries have exhausted, or are at the point of exhausting their lumber and wood pulp supplies, their fuels and their minerals. The fact that Canada has wealth of this sort should, if proper management measures are followed, turn Canada's size into an asset, and largeness can become an opportunity, if not, indeed, one of our principal resources.

The climates of Canada too are generally severe, but they are stimulating rather than inhibitive in their effects; they challenge rather than frustrate. Consequently, in this sense they too may be said to be beneficial. But we must face facts, as Professor Hare has so rightly pointed out; 25 per cent of Canada has an arctic climate, and a further 50 per cent is subarctic. Another important fact is that the 50° Fahrenheit isotherm in summer is a much more important natural boundary than the 60th parallel or the Arctic Circle. This isotherm roughly coincides with the southern limit of the permafrost which Professor Hare mentioned. One small point in connection with his interpretation of permafrost problems: although not wishing to minimize the additional costs of mining in permafrost, I doubt whether at Schefferville it doubles them, and it does not render them prohibitive. His point regarding the application of technical knowledge and the use of experience is extremely well taken, in my view. I am reminded of Vilhjalmur Stefansson, the Manitoba-born explorer, who amply demonstrated the feasibility of living "off the land" in the Arctic. I am not, of course, suggesting that this is an ideal method of adjusting to that environment, but it is shocking to remember that it took some forty years to rediscover some of Stefansson's fundamental

findings, when they might have been used to advantage for that period. Or, we can remind ourselves of the early settlers of the southern Prairies; if they, or their sponsors, had known that they were attempting to colonize a semi-arid environment, their subsequent story might have been very different.

I know that if Professor Hare had had time, he could have dwelt on other physical factors in so far as they affect resource use. There is of course the matter of relief, or physiography. The difference in the physical structure of the land restricts certain resources and certain uses to certain parts of the country. The Canadian shield covers half our total area, and mountainous terrain makes up a further 20 per cent. Canadian relief has sometimes been regarded as a drawback to national development. While it would border on foolishness to minimize such physical barriers, two things might be pointed out. The first is that one of the most forceful stimuli to the progress of any people is to have barriers to overcome. We might well think of the Scandinavians in this respect, while in our own country, of course, the mountains of the West have led to the ingenuity of Kitimat.

The other point is that mountains shed rivers and provide passes that are the very means by which men can climb them or pierce them, and the east-west alignment of many of the major rivers of southern Canada has led to the development of east-west canals, roads and railways. The Trans-Canada Highway is, in many ways, but a 20th century version of the "Voyageurs' Highway" of the 18th century. The present St. Lawrence Seaway is in many ways but a souped-up version of the waterway used in the French regime. Thus, the minor features of relief, the rivers, have become the major lines of Canadian evolution. Canada is not nearly as artificial as is sometimes thought. Canada also differs from the United States of America in that, with the exception of the coast of British Columbia, the major climatic, soil and vegetation zones are east-west, swinging in broad arcs across the country. Thus, there are forces acting against the fragmentation of Canada by drawing together regions which had been separated by relief.

If we superimpose the physical factors of the environment on one another as, of course, nature does, it is soon apparent that the areas where the easiest climates coincide with relatively level land are limited. The Great Lakes-St. Lawrence Lowlands are of this category, but they occupy 1.3 per cent of the total area of the country. Yet, half the Canadian people live on them, they produce almost all the motor vehicles, the agricultural machinery, the tobacco, soybeans, electrical apparatus and textiles of Canada, and roughly half the dairy cattle,



sheep, orchards and potatoes, as well as having 45 per cent of all the occupied farms. This region well deserves to be described as "the richest house on the Canadian street."

The problem with such regions is one of extreme competition for land between the various users, with their ever-increasing need for recreational facilities. The problem here is one of small size rather than of great size. The physical factors attendant upon urbanization—man made physical factors—are here themselves influencing growth. This is hardly likely to decrease, for the most-favored environments of this world are likely to retain their relative positions, no matter what advances in technology are made. Great absolute changes, however, can occur, but it seems to me that in Canada these are most likely to come about through the exploitation of minerals. Although their management is not the concern of this Conference, their very existence is a physical factor which conditions the growth of the renewable resources. One has only to think of the railway to Schefferville, or to Pine Point, or of the impact of oil and gas in Western Canada, or its possible impact on the Queen Elizabeth Islands.

In this connection, the extremes of our size, our climates, our topography and our river regimes have their counterparts in our extremes in regional developments. The problems developed in the one region may be far different from those in another region. These differences must be recognized, identified, and thoroughly understood through research and education before the appropriate solutions can be worked out for each of them.

#### **Discussant (Mr. DAGENAIS)\***

In his interesting report, Mr. Hare has pointed out that the struggle against distance and cold is extremely costly. He has done so with his customary elegance and sense of humor and that is why I wish to thank him. I shall, in turn, repeat a few everlasting truths on the same subject.

Mr. Hare concluded by saying that the vastness of Canada and its climate are two natural factors which affect our economic development unfavorably. According to him, our country is too vast, and one of the most useful tasks that could be undertaken by the federal government would be to attempt to reduce its dimensions. It is not absolutely necessary to have a sense of humor to speak in like manner. I am convinced that Mr. Hare's suggestion will find immediate favor with many advocates of annexation, be they Canadians, American or Russians, as well as members of the growing groups of Quebec Separatists. Numerous well-disposed people would surely be willing to help us resolve this problem by readily

accepting the territories we would cede to them to lighten a heritage that has become too heavy to carry. Should Canadian territory be reduced in this manner, communications would surely be less costly, but would its economic future be more promising? A vast territory yields benefits which may make up for the drawbacks.

The well-known variety and abundance of our natural resources, which will be the focus for the workshops of this Conference, are based precisely on this fact—the fact that our territorial substratum covers a great area of the earth.

In this territory, we find raw materials of all kinds and sources of energy to process them. Consequently, two important factors of economic development are already fully satisfied. There is no doubt that these two elements are not always within hand's reach; we must go after them where they are, and transportation costs are high. Agreed. But is it any different in other large countries such as Russia or China, for example? Is it not also the case in countries of smaller size such as Sweden, Norway, Finland, where exploitation conditions, as Mr. Hare has pointed out, compare with those of Canada? At the start, the chances of success seem even. Therefore, Canadians do not appear at first sight to be especially handicapped.

Our cold-winter, hot-summer climate, on the other hand, appears to me to be, in spite of its obvious faults, a powerful economic incentive, even though Canadians do not always know how to use it as they should. The cycle of seasons starts each year an industrial and commercial mechanism closely regulated by movement of the sun and the temperature variations. Hundreds of industries and thousands of businesses, especially in the field of clothing, construction, heating, sports and transportation, food and travel, are prosperous in our country because of this beneficent seasonal alternation. Houses and means of transportation are extraordinarily well heated, and the result is that Canadians suffer less from cold than the inhabitants of the so-called warm Mediterranean countries or of the tropical desert. Modern techniques find solutions to the majority of problems caused by cold in industry as well as in everyday life. Excessive cold seems easier to surmount than excessive heat. Man is about to win in his struggle against cold and distance.

On the whole, the physical factors of the Canadian environment—natural resources, climate, territory—seem to me quite favorable to economic growth. Should Canadians fail to achieve this end, they can only blame themselves. The resources of the physical environment are not sufficient in themselves—we all agree on this point—and the advantage we may gain from them depends essentially on the individuals who manage them. The most harmoniously devel-

\* Translated from French.

oped countries are not necessarily those that possess the most favorable natural conditions. The natural resources are only worth what we can do with them, and the economic development of a country depends more on the initiative and ability of its inhabitants than on the physical conditions. Human ingenuity and modern techniques reduce each day the concept of geographical determinism. Consequently, the main renewable wealth of a country seems to me, as to many others here present, to be its population, and especially their ability to develop the physical resources at their disposal. But this disposition and this ability can be learned and developed. In short, it is in schools, colleges and universities, as well as by applied and systematic research, that a population may best prepare for this task.

The Canadian population, numerically small and dispersed in small isolated areas, actually finds the task to be done beyond its means to a certain extent,

especially when it considers the whole of the territory that needs developing. Each population island has barely begun to be aware of the possibilities of its own small area of land and it is already beckoned by the mirage of distant and spectacular conquest.

There is a danger inherent in the vastness of our territory and of its resources: the danger of scattering or dispersing energies and goodwill. This danger appears in certain fields of natural resource development where there exist a number of private enterprises, of federal and provincial organizations, badly co-ordinated and inhibited by constitutional problems, with the result that regional ambitions are sometimes frustrated.

In my opinion, the human factors, as well as the physical conditions, quite naturally direct us toward a reasonable and genuine regionalism in the studies required for a rational exploitation and economic development of our country.





# *Scientific and Technological Factors*

Speaker: EDOUARD PAGÉ, Dean of Faculty of Sciences, University of Montreal.

Discussants: J. T. WILSON, Director, Institute of Earth Science, Department of Geophysics, University of Toronto.

N. H. GRACE, Director of Research, Alberta Research Council.

## **Speaker (Mr. PAGÉ) \***

The discussion I am asked to lead off today is concerned with science and technology as factors in Canada's economic expansion. It is easy to go astray.

No one will deny that science and technology play a role of prime importance in the rational development of our renewable natural resources from a number of viewpoints, including conservation, production, processing and marketing.

Examples are numerous. Is it necessary to recall that in the field of agriculture alone, the creation of rust-resistant varieties of wheat has increased the revenues of western farmers by more than \$2,250 million for the 1938-1958 period alone. Crop and livestock improvement through selection and hybridization, the use of new insecticides and fungicides and the perfecting of farm machinery have increased the yields of our farms in a spectacular fashion, while at the same time reducing the labor requirement. In other fields as well, such as forest protection, wildlife management, fisheries operation, processing of raw materials into increasingly diversified finished products, we arrive at the same conclusions: the application of fundamental knowledge to the solution of practical problems continues to contribute increasingly to our economic growth.

It is our government services, for the most part, which have stimulated the application of these scientific discoveries to an ever more profitable exploitation of our natural resources.

At the national level, let us mention first the Department of Agriculture, which enjoys a long and glorious tradition of achievements in the fields of soil use, crop management and animal husbandry. This department operates ten research institutes, of which seven are in Ottawa, nine regional research stations, two regional laboratories and numerous experimental farms. It is the one body most responsible for agricultural research in Canada.

The Department of Forestry has three Branches which perform research, namely forest research,

forest entomology and pathology and, finally, forest products. This research is carried out partly in Ottawa and partly in laboratories located across the country.

The Fisheries Research Board comes under the Fisheries Department. With its stations on the Atlantic and Pacific coasts, this Board carries out both basic and technological research. It sponsors fundamental research in universities to a limited extent.

The National Research Council was created in part to assist universities at the graduate level by research grants-in-aid, and in part to assist industry through applied research in its own laboratories. The National Research Council now consists of nine divisions and two regional laboratories. It has undoubtedly been the salvation of our universities, its financial support, which has increased fivefold in the last six years, continues to provide an essential minimum of research funds for these institutions.

The Canadian Wildlife Service, more modest than the preceding, is part of the Department of Northern Affairs and National Resources. It is a junior agency marked for future growth.

At the provincial level, efforts are necessarily less vigorous and most uneven from one province to another. Let us first mention the provincial research councils which exist in most provinces and which carry out very profitable sponsored research projects in addition to research subsidized by the province involved.

Also of importance are the laboratories and research stations of the various provincial departments responsible for the management of our natural resources, where efforts bear partly on applied and technical research and partly on extension work.

Let us finally mention the laboratories of private industry, and in certain provinces some university faculties and affiliated institutes, which carry out fundamental research very closely related to practical problems.

This summary is incomplete, but it is sufficient to show in a broad outline the variety of organizations

\* Translated from French.

that carry out applied research in fields of interest to us. One might wish for effective means of communication between these organizations in order to provide mutual assistance and avoid duplication of effort.

However that may be, it is difficult to speak of science and technology as factors of economic growth in terms other than research. Economic growth will be enhanced as research of all kinds is expanded.

We cannot undertake everything at once, and we must strive to direct our efforts where needs are most pressing. To attempt to plan research for better utilization of natural resources gives rise to numerous questions. Should we focus our efforts on applied research, or on the training of scientists and technicians? How should responsibilities be divided between universities, governments and industry, and between the federal and provincial governments? Are certain important research projects being neglected because they do not meet with favor? I do not claim to be able to answer all these questions. However, I feel that this plenary session should make a few general observations on research since these considerations are the basis of any resource development policy.

We must first agree on a definition of terms, and I would like, without being too academic, to give a definition of fundamental research, applied research and technological research, and to comment briefly on the practical consequences implied in these definitions.

Fundamental research comes first. This kind of research increases knowledge by the search for ultimate causes. Based on existing or newly acquired data, it provides more comprehensive explanations to observed phenomena. These explanations confirm and expand existing hypotheses or permit the formulation of new ones.

Fundamental research therefore implies the interpretation of exact data which are obtained either by mere observation or by experimentation but always by exercising the greatest scientific objectivity in the control of their accuracy. Parenthetically, may I say that certain types of research are insufficiently subsidized simply because the basic data are obtained without recourse to elaborate techniques. Often we are more impressed by sophisticated experimentation than by the thought of the researcher.

Fundamental research which finds an end in itself may be called academic fundamental research (research for its own sake). Fundamental research undertaken with a view to application may be called directed fundamental research. This is an important distinction because in the second case the researcher is limited both as to choice of subject and, to a degree, in its development. This limitation may be negligible, yet it exists. Research for its own sake

should be carried out at universities, because it increases our knowledge, which is the object of the university, because it is essential for the intellectual stimulation of professors and students and because it leads to the training of scientists and highly competent professionals.

While skimming through the series of excellent Background Papers for these workshop sessions, I noticed without being in the least surprised that, in almost all sections, more money is requested for fundamental research at the university level. This is no doubt because university research contributes to the training of scientists who subsequently staff the state and industry research organization, and no doubt also because the environment better lends itself—or at least should better lend itself—to the speculations which lead to great discoveries.

On the other hand, *directed* fundamental research is obviously essential if we are looking for useful applications within a reasonable time. Thus government and industry should undertake fundamental research mainly, if not always, with a view to practical application. We may indeed wonder whether, within these organizations, fundamental research without any immediate goal does not become academic research outside its natural environment and therefore excessively costly. It contributes directly neither to the solution of urgent problems nor to the training of scientists. If some ivory towers exist outside universities little harm is done, provided that the universities are not thereby deprived of the men and resources they must have.

It would be unfortunate if, someday, it became more attractive to carry out pure research outside universities. Were this to come about we would have to conclude that the universities were not receiving adequate financial support. This lack of balance between the university and the state in the field of fundamental research may become a real danger.

Let us now consider *applied* research. Here, the data provided by fundamental research, instead of being the object of theoretical speculations, are submitted to tests of practicality. Applied research therefore proceeds from fundamental research, but is aimed at the solution of specific problems for utilitarian purposes. It does not extend to immediate application in a natural environment, nor does it include the dissemination of new practices.

Applied research requires as much from the researcher as fundamental research—the same academic training and the same scientific method in experimental work. Well executed, it inevitably provides new data. It makes use of our present knowledge but it also adds to it.

Technological research complements applied research and is the practical result of scientific progress. Technological research therefore is that which



strives to make of immediate practical application the findings of applied research. It is usually carried out in the natural environment where these applications are to be made. It may be largely assigned to highly qualified technicians.

Applied and technological research are therefore clearly the responsibility of government and also of private industries which exploit our natural resources. These industries may either set up their own research laboratories or sponsor research carried out by provincial or federal research institutes. Or if they prefer, they may subsidize research indirectly through taxes.

The state is becoming increasingly conscious of its responsibilities. It has proved this in the past, and a Conference such as this one is a shining example.

In short, whatever the conclusions arrived at by this Conference, the contribution of science and technology will always remain conditioned by the number and the competence of scientific and technical personnel devoted to this work.

Finally, two basic points should be emphasized:

1. It is absolutely necessary to assist universities more generously in the matter of research. Senior and junior research positions should be established by means of direct grants. Also, those primarily concerned should make a point of supporting university research. I refer to industries which exploit our natural resources and to federal or provincial departments responsible for conservation. Several plans could be considered.

2. Careers in the fields in which we are interested, especially in biology, do not seem to attract students in sufficient numbers. Medical research on the one hand, and spectacular successes of physicists on the other, influence career choices strongly. Yet, biological research in all its diversity, concerted investigation of the environment by biochemists, physiologists, zoologists and botanists—without forgetting mathematicians and economists—constitutes one of the most fertile and fascinating fields open to the human mind.

I do not feel that students are sufficiently informed of the attractiveness of these careers. No doubt these were less interesting or less profitable than some other pursuits in the past. Perhaps we should keep in mind this old saying attributed to Benjamin Franklin: "If you don't blow your own horn, it won't be tooted." You will excuse me, Mr. Chairman, for having taken up the university cause with considerable determination; I am counting on Dr. Grace and Dr. Wilson to present a more balanced viewpoint.

Finally, I feel that we have reason to be proud of what has been accomplished so far and I should like to pay tribute, not only to the scientists who work within state research organizations, but also to the administrators who back them up so effectively.

#### Discussant (Mr. WILSON)

When Dr. Grace and I met with Dean Pagé last night and discussed his paper, we found that we agreed so much with his emphasis on the importance of research and his analysis of it, that we concluded—at least I concluded—that I can only comment, or add some comments, on the types of research that were necessary and why research had come to be so important. I also wanted to emphasize the fact that the important conclusions which this Conference will no doubt reach cannot be fulfilled unless trained people are available to do the work that is recommended.

I think it is perhaps important to think about why research has recently come to be so important, regarded as so important; and I think we can think of this in terms of the growth of population and the growth of civilization. After all, mankind has had a long history, and the greater part of it was lived in savagery; certainly nobody thought about research in those days. They did not think much about society because people lived in very small family groups, but it was an important age because it was during that time that man developed to be a human being, and he developed the skills of the individual.

I like to think that there are three stages of culture—not two, as Sir Charles Snow has suggested, and the first of them was the stage of the skills and the control of the individual, the stage of the arts. The second stage came with the coming of agriculture, and that enabled mankind's population to grow for the first time. It had been limited for a very long time to a very small number. And with the growth of population and the growth of villages and cities came the humanities, the great religions of the world, government, armies, law, writing, all those things we class as the humanities and the social sciences. However, I would point out that the arts were not replaced; that they never reached higher levels than they did under the Greeks.

Now, with the coming of the Renaissance and the development of power for the use of mankind, power other than that of animals and man himself, we have the third stage, the stage of the sciences and the humanities and the arts. And, if the arts were the control of the individual, the skills of the individual; and if the humanities were the control of society; then the sciences are the control of nature. And the sciences came with the development of power. They did not in the least supersede the social science and the humanities. If man had needed social skills before, when he lived in villages and small cities, today with a much more complicated society, he needs them much more. The point is that we must not have a dichotomy of which Sir Charles Snow spoke, but have a unity and a balance between the sciences and

the humanities. And perhaps looking back at that historical point of view, one can see the measures of success that our skill, mankind's skill, in organizing life, and in technology, has met.

The figures on population have been worked out for Britain and for some other countries, and it appears that for the first hundreds of thousands of years of human existence, there did not exist in Great Britain, ever, more than five thousand people; those are all that could be supported by hunting and gathering before the coming of agriculture. Today in Britain there are fifty million people, and what this means is that the success of our society as far as Britain is concerned is measured by the fact that ten thousand men live now in comfort and relative safety from day to day, whereas formerly only one person lived in fear and poverty. So the combination of organizing a society, controlling ourselves and developing science, has meant great things to human beings, and it is going to be increasingly difficult to do this in the future. This is why research is one of the things that we need.

But, one might say, perhaps we always needed this. Why has research suddenly come to be such a popular word; why is it so important now? I think that it is a matter of good fortune that science became powerful twenty years ago. Before that, the practical man had been valued; the engineer, the practical farmer were of more value, generally speaking, than the scientist. About twenty years ago it suddenly came to be realized that the scientist could do great things. Until twenty years ago, Einstein was the epitome of the remote dreamer, but it was suddenly realized, when atomic power and atomic bombs were first shown to the world, that he had been the archetype of innovators, that he had really done more to transform the world than all practical men. And it became apparent that ivory towers have windows, that they are not places of seclusion and that those people who live in ivory towers, who take the trouble to look out (which not nearly everybody does), have in their towers a place of vantage with an excellent view of the world, and a more distant view than the workers in the fields below.

This leads me to think about what types of research there are. The word "research" has become a very popular one, and it means different things to different people. In the social sciences and the humanities and the arts, it is very often directed toward gathering data toward a better understanding of what has gone on before. The student in English who undertakes research does not anticipate that he will improve on Shakespeare. The student in history who undertakes research does not anticipate that he will change the campaigns of Alexander the Great. He will merely find out about what has gone on before in order to illuminate his own knowledge.

In technology, on the other hand, research means something quite different. The engineer or the agriculturist who undertakes research anticipates that he will improve; that wheat is better than it was in the days of Shakespeare and that automobiles did not exist in the time of Alexander the Great, that better automobiles can be built, that more resistant forms of wheat can be developed. Technology advances step by step, improving on what has gone on before. But in science, it has another meaning again, because by getting a really deep understanding of what things mean, it is sometimes possible to make a great leap forward, to develop something wholly new. Television did not come because people improved methods of shouting across a room; it came from an idea and developed from something entirely new; it was not an improvement on something that existed before. The same was true of atomic power. It is not an improved steam engine; it is a new idea. It is a great leap forward—the same as many modern medicines.

In my own field, in mining, many mines have been found in recent years, not by prospectors, but because physicists have developed methods of flying around in airplanes. A number of mines, such as Steep Rock Lake, some of the nickel mines in Manitoba and around Sudbury—which were hidden before—and could not be seen by prospectors and had not been found by drilling—were found by flying over them in airplanes. Two colleagues of mine, Gaskell in London and Irving from Australia, who is now visiting Canada, have recently suggested apropos of the drilling for oil that we have seen pictured in the northern islands of Canada, that maybe if some physicist had gone up and collected a few rocks in the northern islands and studied their magnetism, for a few thousand dollars he might have been able to predict whether they were likely to find any oil in the North in advance of drilling.

New ideas of this sort can provide great shortcuts, great economies and great advances. But it is our good fortune that they developed and became possible only a few years ago. That is why research is important, and it is becoming more so at a time when, with our greater demands for comfort, our greater and growing population, we need it. So, then, with respect to the differences in research in the social sciences and in the technical sciences, I would say that although we know human nature and human society quite well, we cannot change it very fast. We do well to study the great examples of the past. But in the study of nature which is the field of the sciences, we can change nature a great deal. We have found out how to do that. We can invent wholly new things. And here is why scientific research is important. We need to preserve a balance in these things. Now it is not a question of the



sciences versus humanities, it is the importance of both. At the present time, we deplore Soviet materialism and the lack of humanity in their government—the lack of humanism. But we must be careful on our side—with the vital things that we cherish, democracy and freedom—that we provide it with technical sinews. There are some indications that because, in our society, we have not integrated science, because we did not pay enough attention to it, we have failed to get the big missiles we needed; we have failed to make the progress we needed.

I think this has not been a technical failure. Nobody who has been to the Soviet Union, still less to China, would believe for a moment that the Americans were behind the Russians in most technical things. But, somehow, the technical people in the Soviet Union were able to sell their ideas better in some respects.

In our society, we too often tend to regard the scientist as a plumber; somebody that you bring in to fix a leak and then send him away again. Scientists are not part of the normal pattern of life; administrators are not generally drawn from scientists. So we need, I think, to feel that we are going to integrate science as part of our civilization and feel that it is an important part of the control of our resources. We need to support it much more.

The United States, with its greater wealth, is spending a hundred times as much on research, according to figures that have been quoted recently in Montreal—five times as much per unit of wealth—as we are in Canada. We are not producing nearly enough students. Perhaps they have not had the opportunities or the incentives. At any rate this sort of figure is typical: last year, the University of Toronto produced 30 to 40 students in philosophy, 37 in modern history, and 39 in political science; but only five biologists and only four geologists. I see in today's paper in Montreal that they are now recruiting chemists for work in Canada from Europe because the supply is not great enough. Somehow, with our free enterprise system we have not provided the incentives to produce enough scientists even today for our needs. We certainly are not going to produce enough for our needs tomorrow unless there are more incentives. In part, these may be financial, but partly I think there is a need that scientists should feel that they have some power. Candidates for top management have rarely been drawn from scientists. If you want to go to the managerial side you do not ordinarily expect to go through science. One of the values of this Conference is that it is doing a great deal to publicize science, and we certainly need more emphasis on teaching science in the schools.

Finally, I would strongly mention that whatever the recommendations of this Conference, however important they are, they cannot be executed without

enough men; that we need men in government laboratories, and that they will need staff. But somehow, we have failed to interest enough people and they are not coming forward. Research is powerful today, it can provide enormous assistance in planning and utilizing our natural resources, but as Dean Pagé has said, it has been neglected. The recruiting of scientists starts in the universities, and it is the universities that we must provide with greater incentive and greater help. It also is the universities that have produced traditionally most of the most striking ideas that have made science so powerful.

#### Discussant (Mr. GRACE)

Frankly I find it very hard to disagree in principle either with Dr. Pagé or Dr. Wilson. In many respects they have been right down the line, and I would only be an apostle of the obvious were I to second their point of view. I do feel a little bit, however, that both of them, deeply immersed in university matters and with long records in universities, have given us pretty well the university point of view and, undoubtedly, it is highly important. On the other hand, when one has had the privilege of many years of labor in federal and provincial research organizations, one perhaps does see some more pressing aspects to this whole question of resource development. We have to have the men, the universities have to have the money to train them, and the results will come out tomorrow. But, some of our problems are in the tomorrow, pretty well, in the twenty-four hour sense, or not far off in the too-distant future. How are we going to get on with the job? Frankly, this question has brought me to three points of view, the three ideas I would like to leave with you.

Dr. Pagé outlined the present way in which our science and technology are developed and are applied, through the universities, through government research organizations, and down through and by industry. Now, as you may have wondered—and this is no reflection on my past or present association—in 1961 is this not a bit too much glorification of the existing research group, wherever it is?

Is there a tendency, perhaps, that all administrators love to see their organizations grow? If I have three chemists, I am sure I can find problems for three more or ten more biologists, but are we making the most effective use of the existing trained scientific people that we have? Now it was all very well a few decades ago for the Great White Father, the federal government, to build up an organization to do a necessary job to apply science in a particular area. I think for instance of the wonderful work on resource research back thirty or more years ago. I am not at all sure that our present problems should be faced by the same type of approach, or the same

type of organization. Today, we are a much larger country than we were, and I have a feeling that possibly there should be a lot more decentralization in the way our scientific and technological resources are applied. This is not going to be too popular, but I feel, in the days ahead, decentralization will bring an active, intelligent interest on the part of a lot of people who, at the present time, tend to sit back and say—well, we will leave it to the Great White Fathers, they have been doing a good job. And they have in many ways. But let us examine the existing groupings of our scientific and technological talent. I think, if we do, we may find we are going to get a lot more, and a lot better mileage out of our research dollars.

So, the first point I want to leave with you is this question of a new look at the way in which we group our scientists and in the way in which we get on with the job.

Now, the second extremely important point to me is the role of industry. We want to have industrial development; the lack of it this morning was deplored. Well, what have we done as individuals, as scientists or as economists to encourage industry to take a greater part in the technological development of our resources? We preached at them, we deplored the control of our resources by foreign capital. We have been annoyed, I think unfairly, at large companies who do most of their research elsewhere. But I do not think that is enough. I would refer to Dr. Pagé's remarks, and the magnificent support that the federal government has given to the National Research Council; and the university aid that has been increased. I do not know what it is now, possibly in the order of nine or ten millions, but I hope it keeps on going up. But we see the strengthening and the growth of our universities in very large measure as a result of this carefully directed, intelligent, pump-priming. Now I put it to you—there are many small industries and some large ones. If there were, starting on a small scale, available funds to set up some parallel type of pump-priming

in the area of applied research and development, I think we might find surprising rewards in the days not too far ahead. I hope you give that serious thought.

Now, thirdly, there has been in my experience, some difficulty in properly mobilizing scientific and technological resources toward the solution of complex problems. What I mean by this is, we want to do something in terms of resources and it, shall we say, bears on the area of agriculture. But you find the particular problem involves physicists, chemists and meteorologists, and heaven knows what not. In the past, some of us have experienced a little difficulty finding out what the status of the whole involved scientific technological supporting talent is in Canada. How can we get this thing underway? Who can help us, or whom can we help? I have a feeling that possibly we should look to some centrally located committee in Ottawa, or an advisory body to which complex and complicated problems bearing on resource development could be taken, and this body would have the answers. It would know what the various provinces were doing and it would know what various government departments' interests and responsibilities were. You would perhaps get a few things on the rails a little more rapidly than you otherwise would. I thought of this point with particular strength when Dr. Deutsch this morning talked about our magnificent resources and about policy. And frankly, this is 1961, we are no longer in the Model T Ford age. We are in the jet age, and we must be prepared to apply our existing scientific talent and knowledge in the most effective way. That is going to mean, I am sure, careful examination of our existing approaches in a great many areas.

On the other hand, it is surely a tremendously challenging task. Each of us has a great deal at stake here. It is going to take some pretty unselfish, cheerful self-examination, in a good many areas, if we are going to lay foundations for proper resource development for the next two or three decades, let alone for our grandchildren.

# *Administrative and Jurisdictional Factors*

**Speaker:** W. R. LEDERMAN, Faculty of Law, Queen's University.

**Discussants:** PIERRE-ELLIOT TRUDEAU, Economist, Montreal.

HUGH J. WHALEN, Dept. of Economics and Political Science,  
University of New Brunswick.

## **Speaker (Mr. LEDERMAN)**

In Canada, we have a federal constitution, and this, of course, bears in important ways on the regulation, management and development of our natural resources. Governments are called upon for legislative measures and executive action to provide for such things as conservation of forests and fisheries, control of the pollution of water, safe navigation of rivers; also governments are called upon at times to engage directly in business enterprises, in developmental undertakings, such as marketing schemes for natural products, works to provide irrigation or to develop electricity from water power, and so on. My remarks are those of a constitutional lawyer, speaking of some of the main features of our constitution as they bear on the powers and responsibilities of our government concerning natural resources.

Over the whole field of actual and potential governmental activity, our Constitution distributes powers by categories or classes—some to the national Parliament and government, others to the respective provincial legislatures and governments. So, we find ourselves with two lists, one giving the federal classes of powers, and the other the provincial classes of powers. We must constantly assess these two lists one against the other in the ongoing processes of governing the country.

Examples of federal classes of powers and responsibilities that bear on control of natural resources are:

- General federal power to make laws for the peace, order, and good government of Canada.
- Federal power over trade and commerce.
- Navigation and shipping.
- Seacoast and inland fisheries.
- Criminal law.

Connecting works and undertakings (such as inter-provincial railways, canals or pipelines).

Similarly, examples from the provincial list of powers are:

- Control of the public lands of the provinces.
- Local works and undertakings.

—Property and civil rights in the province.

—Generally, all matters of a merely local or private nature in the province.

These are important examples of the classes of powers and responsibilities, as they are assigned in our Constitution.

Ideally, the federal list should exhaust all matters of really national scope and importance, while the provincial list should include everything that is primarily of local concern and significance in the respective provincial regions. Now, we do pursue this ideal with some success, but also subject to the imperfections and shortcomings that mark all human institutions. In constitutional matters in a federal country one must simply learn to live with certain difficulties because they are in large measure unavoidable. My point here is that the federal and provincial categories of power are expressed and indeed have to be expressed in rather general terms. This has the virtue of bringing considerable flexibility to our Constitution, as we shall see, but this flexibility comes at the price of much overlapping and conflict between the various definitions of powers and responsibilities.

For example the federal parliament has power to regulate fisheries, but the provincial legislature controls trade within the province and industrial plants in the province. Now, are you regulating fisheries if you legislate to control the operations of a fish-canning factory in a province, or is this the regulation of a locally situated industrial plant? The answer is far from obvious. The judges who have to come up with answers have said that in this instance, you are dealing with a local industry and not with fisheries in the sense of the Constitution, and so, the power of regulation was assigned to the provinces.

This is just one example, but it is typical. This is very much the usual thing as a difficulty to be faced in the interpretation of a federal constitution. To put it another way, our community life—social, economic, political, cultural—is very complex and cannot be fitted neatly into any scheme of categories without considerable overlapping and ambiguity oc-



curing. Most government officials encounter these problems frequently and in cases of real difficulty, our Superior Courts enter the picture and have the last word. In Canada we have inherited impartial and independent courts on the English model, and this has provided us with the best type of tribunal available for these delicate and difficult tasks of constitutional interpretation.

And judicial interpretation is of great importance, for there is an inherent flexibility to some of our categories of power which the judges can bring out and develop as the need arises. For example, the British North America Act of 1867 gave the federal Parliament power to regulate "telegraphs" connecting two or more provinces or extending beyond the limits of a province. When radio came on the scene many decades later, the judges included radio under "telegraphs." They did this by analogy and by going back to the root-meaning of the word "telegraph." The word "telegraph" was in the language before electricity was discovered, or at least before electricity was used as a means of communication. Hence, control of radio broadcasting was assigned to the federal Parliament.

Another example of this inherent flexibility is found in what is known as the federal general power to make laws for the peace, order, and good government of Canada, in all matters where there is a high degree of necessity for control by national regulation. Now, this is not just an emergency power—there was a time when we thought it was just an emergency power—but it is not just emergency power though it includes the emergency powers. It also includes things national in their scope and importance as a matter of stern and clear-cut necessity. A striking example of this is afforded by atomic energy and radioactive substances like uranium. Normally, exploration for minerals and their mining, refining and manufacture are local to a particular province and are under control of that province by virtue of the property and civil rights clause, and also as local works and undertakings. But not so uranium and other radioactive substances. In the *Atomic Energy Control Act of 1946*, the federal Parliament asserted complete control of radioactive substances like uranium, from the stage of exploration for ore to the final disposal of the finished products. Now in these days of atomic fusion and fission, the high degree of necessity for national regulation, I think, is clearly present. The Fathers of Confederation, of course, knew nothing of atomic energy, but the general power which they wrote into their act of 1867 has been sufficient to place legislative control of atomic energy at the national level where it belongs—judicial decision has confirmed the validity of the federal statute which I mentioned.

There is another federal power of great importance

in the fields of business and developmental enterprise. I refer now to the power to declare works to be for the general advantage of Canada, or for the advantage of two or more of the provinces. If Parliament makes this declaration by statute, the Parliament of Canada thereby acquires exclusive legislative power over the work specified and its function. "Work" here is used in its physical sense of a factory or a plant, or a building of some kind. This power has been used, for example, to ensure the validity of the comprehensive national schemes we have for the grading and the marketing of the grain of the Prairie Provinces. Both the *Canada Grain Act* and the *Canadian Wheat Board Act* contain declarations that each and every grain elevator, flour mill, or feed mill, is a work for the general advantage of Canada. Without this, the Parliament of Canada could not have regulated the aspect of the grain trade that was local in the province where the grain was produced. I think there was general agreement on the Prairies that this type of regulation was needed on the national level, and it was Chief Justice Sir Lyman Duff back in about 1926, I believe, who suggested in a judgment the use of the federal declaratory power as the foundation for the power to regulate the grading of grain.

Also, this power of declaration has a future reference, and works that are not in existence but are planned or contemplated can be declared in advance to be works for the general advantage of Canada. Federal jurisdiction then enlarges to include them. In this way, for example, the federal Parliament could take control of the development of the Columbia River, if the federal government secured passage of the necessary declaratory statute. In this way, the three dams on the Columbia called for by the treaty with the United States could be built by the federal authorities, and when built, they would be owned by the federal government and they would be exclusively under the legislative control of the federal Parliament. I merely point out that under the Constitution this declaratory power could be so used. I am not offering any opinion on the political or the economic wisdom of using the declaratory power in this way; that is for others to say. At least, the power does exist, and I suggest its very existence means that the Government of Canada has real bargaining strength in its efforts to reach an agreed settlement with the province of British Columbia, and one hopes very much that there will be an agreed settlement.

Likewise, the provinces have wide and confirmed powers in the fields of natural resources by virtue of some of these generally expressed constitutional powers. Much of the provincial control stems simply from provincial ownership of public lands and the bottoms of lakes and rivers. The courts have assured



the provinces important property rights in the inland fisheries, for example, by upholding the implications of provincial ownership against the federal power to regulate fisheries. Also, anyone who follows the course of judicial decision I think will agree that the courts since Confederation have a good record as caretakers of essential provincial autonomy in property and civil rights and respecting local works and undertakings.

Wise judicial interpretation of the distribution of powers is very important, and indeed I think must be our principal reliance for striking the proper balance from time to time between the maintenance of stability and adjustment to new things. I do not think that much is to be expected from processes of constitutional amendment. For the most part, we must expect to continue to work with the present categories of federal and provincial powers and responsibilities. Now, I hope of course that the present efforts to bring the amending processes home to Canada will succeed. But, even if they do, I believe the domestic amending process that we get will be rather a rigid one, difficult to work and seldom operated. Up to a point I do not regret this; one does not want an easy-going amending process in a federal country.

Anyway, as I have indicated, I think wise judicial interpretation is much more important than amendment. Judicial interpretation is a continuous process and potentially can bring considerable flexibility where it is needed. In addition, I would emphasize that there are certain devices of voluntary co-operation between the Canadian government and those of the provinces that provide further important means of adjustment to changing conditions and needs.

I may, in conclusion, just notice three of these devices briefly.

First, I would mention delegation of legislative powers by the federal Parliament to a provincial board, or vice versa. For instance, the federal government has delegated certain powers to regulate interprovincial and international marketing of some natural products to provincial marketing boards of the producing province. Another example is the delegation of powers of regulation of interprovincial trucking enterprises to provincial motor vehicle boards. And now I would emphasize just briefly that delegation differs from amendment. This is in effect 'voluntary agency' in a legislative field. It should not be confused with constitutional amendment because the party with the authority originally can revoke the authority and terminate the agency at any time. Likewise the delegate or the agent can renounce the responsibilities and the powers at any time or indeed decline them in the first place. So delegation is something which rests on consent as between the principal and the agent,

and therefore, is not to be confused with amendment.

Second, we may find a system of federal regulations administered and enforced by provincial civil servants, and indeed the content of the federal regulations may be as recommended by the provincial authority. In one of the Background Papers you will read that this is exactly what happens with the regulation of sport fishing in the inland provinces.

Third, conditional grants of federal money may be made to assist projects that legislatively lie within provincial power. The Trans-Canada Highway program and the Roads to Resources program are examples of this. So, this emphasizes that the financial power of the federal government is very important in these respects.

Now it is true that these measures of voluntary co-operation depend for their efficacy on continuing mutual consent and on close co-operation between provincial and federal officials. The Background Papers for this Conference describe many important and successful partnerships of the types that I have mentioned. I expect that the future will see a good deal more of these types of federal-provincial co-operation.

In a word, then, my conclusion is that our Constitution is a good constitution, and that it permits us to work effectively in many ways for the welfare and advancement of Canada in all respects, including the development of our natural resources.

#### Discussant (MR. TRUDEAU)

I shall speak more as a lawyer than as an economist. I generally do not mind being introduced as an economist when I am speaking to a group of lawyers, but there are quite a few economists around, and I think it is perhaps safer to speak as a lawyer. I am all the more proper in saying so because most of my remarks will consist in saying that at a conference such as this, lawyers and administrators have one main function, and that should be to listen and keep quiet.

\* Constitutional law and administrative patterns have no absolute value in themselves. They are only frameworks for action. These frameworks will be right and efficient only if they are designed carefully to fit the facts.

Consequently, a technocrat tackling resources-for-tomorrow problems might be inclined to believe that the solutions should be derived wholly from technological knowledge. The job of legislators and administrators should be merely to fashion their instruments in accordance with the facts.

However, such a belief would be mistaken for the very simple reason that laws and administrations

\* Translated from French.

must embrace the *whole* reality of which natural resources are only a part. The whole reality includes demographic, cultural and moral data, political requirements, economic factors, historical conditions and what not.

It is this whole that the Fathers of Confederation had in mind when they made up the Constitution of Canada. It is to adapt it dynamically to the whole changing reality that the Constitution had to be amended several times since 1867.

It is no doubt with all this in mind that the present Conference decided, on the very first day, that constitutionalists and administrators should be given the opportunity to speak up. But this having been done, it would be desirable that the Conference adopt as soon as possible a technocratic approach and that this large gathering of experts not lose any time in considering jurisdictional squabbles or in dreaming of the best administrative world possible.

To be sure, I can understand how tempting it must be for a natural resources technician to criticize our constitutional laws and to point out the deficiencies of our administrative practices. They can see, as well as any one else, or even better, that these frameworks date back, for the greater part, to an era in which our boundaries were remote and our resources seemed inexhaustible, an era during which the dominant philosophy was one of non-interference. Indeed, as Mr. D. W. Carr points out so clearly, both federal and provincial governments were, until around 1930, much more anxious to transfer our natural wealth than to manage and conserve it.

However, it would be foolish—and a waste of this technician's time—to hope that the present Conference could result in a resources policy that could be applicable to the whole of Canada, immediately and satisfactorily. For some time yet, no doubt, urban growth will proceed at the expense of arable lands and aesthetics, industrial centers will continue to pollute our rivers and lakes, and conflicting interests will continue to divide the forest industries and the hydroelectric ones. Hunting and fishing enthusiasts will find something to squawk about, federal and provincial civil servants will strive to extend their respective empires at the expense of each other, and the political parties will strive to win elections at the expense of our natural resources.

Whence then must progress come? It must come from a united front of all the experts on a scientific and technological basis. The experts must forego their vested interests and their political conflicts, and warn the Canadian public that there exist certain objective data which cannot be ignored without danger to everyone's health and welfare. If such were done, this Conference might mean the end of an era during which all the pressure groups tried to prevent the resource problem from being considered

objectively, from the single viewpoint of the *general* interest.

There are few sectors of public life in which the technocrat should have more to say than in the field of natural resources, because in this field objective research and scientific experience are highly possible. It has nevertheless been a field in which, until now, the voice of the expert has not often been heard.

At long last, this week, it appears that the experts have decided to speak loud and clear. They should be concerned with reaching the public and being understood, for it is mainly by influencing a majority of the people the technocrat may assert himself in a democratic form of government.

In this sense, the observations of Professor Lederman are an excellent starting point. His observations pointed out that governments and courts have always been able to come up with arrangements that allowed the jurisdictional framework to adapt to social and economic reality, as soon as the latter could express itself forcibly.

It would of course be tempting for me to discuss certain opinions of Professor Lederman concerning federal grants, or "delegations of legislative power." It would be tempting to propose a few reforms concerning a court of last resort in constitutional matters.

But the present Conference should have no part in legal bickerings. It will not succeed in avoiding it, however, unless the experts themselves are willing to part with their legal or administrative prejudices. Evidence that these prejudiced opinions really do exist may be found in a number of places in the Background Papers—excellent in other respects—prepared for this Conference.

For example, we often find the following way of saying things: "Such a reform is possible only if the federal government takes the initiative of . . ." Or this one: "This situation may be improved only if the provinces start by . . ." and so on.

It seems that by speaking in this manner experts are committing serious tactical errors, for they open the door to jurisdictional and political debates which will in the end claim all our attention at the expense of technological realities.

The natural resources technician would do well to follow the good example of Professor Lederman and consider political realities and the federal form of government as data. If this is done, all political groups and administrative bodies will be sympathetic to the cause of natural resources, and they will lend their support to that cause.

The expert must therefore direct his appeal to all levels of the electorate, for it is the voter who ultimately compels federal, provincial and municipal governments to take action. And must not the cause



of natural resources be defended passionately at all levels of government?

#### Discussant (Mr. WHALEN)

Dean W. R. Lederman, I believe, has provided an excellent introduction for the discussion of jurisdictional aspects of natural resource management in Canada. His general view appears to be that ample opportunity exists within the framework of Canadian constitutional law for intergovernmental co-operation as regards the implementation of national resource objectives. Most observers familiar with the background of this subject, would probably agree that such an optimistic appraisal has become possible only because of very recent developments. Prior to the second World War, for example, it was commonly asserted that given public programs were not technically possible in Canada because the Constitution did not clothe the appropriate jurisdiction with adequate legal competence. Thus, an abstraction, called the *Constitution*, was vested with potent instrumental power, and came to be widely regarded as a prime factor determining both the content and the direction of public policy. Such a view was mistaken, for it conveniently neglected the fact that constitutions and administrative structures have no directive power apart from the preferences and the objectives of men. But, it served admirably as a screen for the votaries of inaction in many fields, and more especially in those areas requiring federal initiative and control. Fortunately, since 1945 Canadian policymakers at both levels of government have contrived with some success to make a constitution that worked for Canada, and not vice versa.

Nevertheless, I believe that Dean Lederman has been rather too optimistic in his appraisal this afternoon. Admittedly our Constitution has inherent flexibility, given consensus in the exercise of will on the part of our political and administrative leaders; admittedly we must continue to depend upon enlightened judicial review rather than to introduce the rigidities of formal amendment procedure. But it has been amply demonstrated in the Background Papers prepared for this Conference that both the legal and administrative aspects of intergovernmental relations, as they affect resource development in Canada today, are far from perfect. To assert that the Canadian Constitution has been flexible must not be taken to mean that the direction of judicial determinations relating to jurisdictional issues has been either correct or appropriate.

In his essay on the effects of the legislative and administrative framework on agricultural resource adjustment, for example, D. W. Carr in the Background Papers, has shown how judicial decisions turning on federal power over trade and commerce, as against provincial power over property and civil

rights, have introduced many grave uncertainties and have, in his words, made interprovincial co-ordination and regulation extremely difficult in some cases. Later in the same paper, that author observed: "Until recent years, these judicial interpretations have given priority to provincial responsibility for property and civil rights over federal responsibility for agriculture, trade and commerce and other fields." A recent decision in 1954 on international and interprovincial truck transportation appears to have departed from past precedents, and Mr. Carr provides the discussion of the legal points raised in the decision *Attorney General of Ontario Winner A.C. 541, 4D.L.R.657, 71 C.R.T.C.225*. This case in fact gave to the federal government not only control and jurisdiction with respect to international and interprovincial truck traffic, but also control over intraprovincial truck traffic that was tied in with both international and interprovincial traffic. The federal government promptly thereafter delegated to the provincial boards, as Dean Lederman suggested, the power and jurisdiction with regard to this important matter.

One of the oldest and one of the most successful areas of intergovernmental co-operation in Canada relates to the grading and inspection of farm products. Some observers contend, I think rightly, that recent judicial decisions have rendered the division of legal competence too uncertain in this field; it is observed that one province now employs its own inspectors. Much of the same uncertainty was noted many years ago by Professor Corry with regard to producer marketing boards. In the words of Carr, "Because of their uncertain legal position (with regard to such boards), there has been a tendency for the federal government to facilitate action and the necessary regulation, to forego its responsibilities in favor of those of provincial control, as in the case of highway transport."

Now, we all know that problems of divided jurisdiction are a peculiar feature of federalism; they arise not only in the field of agriculture and fisheries, but with equal or even greater difficulty in such areas as the regulation of insurance companies, the investigation and conciliation of industrial disputes and, at least in some measure, they are to be found in the administration of our complicated conditional grant arrangements now prevailing. Upon the completion of his classic study in 1939, Professor Corry concluded that "when the Dominion and the province share the administration of some single function of government, it leads in most cases to friction, waste and inefficiency." But he went on to say at that time that "Canadians may prefer, for the sake of local autonomy, to pay these costs rather than to set up unitary control where that is the only practicable alternative."

Recent developments have shown, I think, a notice-

able improvement in at least one respect; postwar judicial decisions have enabled the Dominion to delegate certain powers to the provinces and *vice versa*. Thus, where there is a willingness to delegate, the problems arising from divided jurisdiction can be avoided to some extent, without recourse to formal constitutional amendment.

My own view of these matters is similar in principle, but rather different in emphasis to that put forward by Dean Lederman. First, while I agree that in a federal state judges ought properly to be politicians, at the same time I believe that judges must, like politicians, assume responsibility in some form. Judges indeed like the rest of us stand in constant need of instruction, especially in those complex areas of public policy to be examined during the next week by this Conference. It can only be hoped that the process of instruction will produce judicial responsibility. Secondly—and here I concur fully with Dean Lederman—there appear to be no constitutional barriers which absolutely prohibit the implementation of resource development programs in Canada. Where there is knowledge and the desire for common objectives, the appropriate legal means can be found; where there is a will there are ways.

Last, the work of this Conference should provide some of the necessary knowledge and should help

to generate some sense of the urgency for a truly integrated approach to balanced national resource development in Canada. After all, the future welfare of all Canadians irrespective of the province in which they happen to live, is intimately bound up with our ability to succeed in this regard.

Clearly, it is in the national interest to achieve a broad consensus in this vital area of public policy; therefore, it is essential to create and to sustain intergovernmental organizations capable of promoting such consensus. But, in my opinion, no amount of tinkering with the *British North America Act*, and no administrative contrivances will be of much use without the creative ingredient of what I call simply "political will." I am aware that politics must be practical, that politics indeed is the art of the second best. And I am far from postulating a *deus ex machina*, a spirit of co-operation which in some mysterious way will solve all our problems. I well know that we have sectional and regional differences that are bound to condition our approach to all things political, including resource development. But the main question for the future is: notwithstanding these differences, are we sufficiently mature in a political sense to adopt a more reasonable strategy regarding the management of our renewable resources?



# *Economic Factors*

Speaker: W. C. HOOD, Department of Political Economy, University of Toronto.

Discussants: YVES DUBÉ, Director, Department of Economics, Faculty of Social Sciences, Laval University.

J. F. GRAHAM, Department of Economics, Dalhousie University.

## **Speaker (Mr. Hood)**

This audience will, I am sure, agree that the topic assigned to me is one of extraordinary scope. Since this is an opening plenary session of the Conference, I have interpreted my role to be that of blocking out the relevant headings under which detailed discussions of the topic might profitably proceed. It would of course, be quite futile to attempt in twenty minutes to do more than catalogue the economic factors conditioning economic growth. These remarks are, then, in the nature of a catalogue; there are three main headings in my catalogue of factors conditioning economic growth. These headings are:

1. The characteristics of the people.
2. Economic resources and institutions.
3. Economic understanding and policy.

I shall now confine myself to a very brief and terse recital of the principal themes which, in an extended analysis, should be developed under each of these heads.

While this Conference is devoted explicitly to the study of natural resources, it is well at the outset to reflect upon the truth that a nation's most important resource is its people. A few years ago in connection with another great national endeavor like this Conference, I observed that people must want goods, know how to produce them, and be willing to work and save for them, if they are to have them in increasing abundance. I continue to believe in the profound truth of that statement.

In the first place, economic growth must be wanted by the people if they are to experience it; without aspiring to higher standards of living, higher standards will not be attained. Much as we may, in philosophical mood, deplore the materialist outlook, such an outlook embracing a desire to acquire goods is a necessary condition for economic development. I often felt during a sojourn in Africa this summer that while some leading citizens of the countries I visited understood what constituted a higher standard

of living and wanted it desperately, masses of the population did not, and that until their material aspirations were raised, economic development would be difficult indeed. But if existence of demand for goods is essential to growth, it does not guarantee it. A people must not only want goods, but be willing to work in order to get them. Attitudes to work are a vital factor conditioning economic growth.

The increasing pursuit of leisure, as the value of output per head rises, may be wholly desirable and sensible, but it limits the rate of rise of output per head. Not only do attitudes to work condition economic growth, so also do attitudes to saving. People directly, and through their institutions, must be willing to save for the future, if the future is to yield a more abundant life than the present. They must be willing to let those from other nations or regions contribute their savings. By "saving" in the present context, I mean not merely the negative act of not using resources for current consumption, but also the positive act of investing resources in the creation of capital to enlarge productive capacity. Of course, the creation of capital requires the exercise of foresight, the taking of risks, and the organization of enterprise. A spirit of enterprise shared among capable and enthusiastic entrepreneurs within government and in the private sector of the economy is an important characteristic of a people that contributes to economic growth. But not only is growth fostered by the skill and daring of an elite, it is also fostered by the education and training of workers at all levels. Investment in real capital is essential for economic growth, but investment in human capital is no less so. These characteristics of the people then, their material aspirations, their attitudes to work, their attitudes to saving, their spirit of entrepreneurship, and the general level of their education and training are important factors that condition the rate of their economic growth.

There is no need to argue the importance of resources—natural resources such as climate, land,

minerals and water—as factors conditioning economic development. It is the recognition of their importance that led to the summoning of this Conference. I want to make only four observations concerning resources and economic growth, observations that would serve as principal themes for discussion, I think, in an extended analysis of our topic.

The first observation is that the amounts and characteristics of the resources known to exist, and available for use, determine an upper limit to the rate of economic growth at any given time and place. The limitations of such resources constitute, of course, one of the basic scarcities, which, along with the scarcity of time and effort, justify the science of economizing which some of us profess. I have not said that at any time an economy grows up to the limit imposed by its resources. No, some resources may be unutilized, and others may be underutilized, or misallocated. Some persons are currently arguing that natural resources are less important now than formerly in determining an upper limit to economic growth. I find the evidence in support of this proposition unconvincing, but I shall not debate the issue here—merely raise it.

The second observation I would make is that the resources available in a given locality determine in considerable measure the kind of economic activity that will be carried on in that locality. The theory of location of industry accords a prominent place to the geographical distribution of resources. If specific forms of activity are valued as ends in themselves, then, of course, the possession of resources which attract such forms of activity becomes a necessary condition of economic growth. Some persons, I believe, measure economic growth in terms of the share of national product arising from manufacturing; for them the precise form of the resources possessed by a given locality is a more important factor of growth than for those who measure growth in terms of output per head.

It is desirable to follow this last observation rather quickly with a third, namely that an economy is not condemned to a specific rate of growth by the character of the natural resources it possesses. At least this is so to the extent that the economy may trade with others. The country's or region's comparative advantages in trade are determined not only by the geographic distribution of natural resources, but also by the international or interregional differences in skills, training, capital and enterprise. Countries of the world which have enjoyed high rates of growth have not had similar endowments of natural resources, nor are the countries which have had low rates of growth similar in their resource endowments. Nations have developed skills, capital, and enterprise, both to compensate for certain lacks in resources, and to permit exploitation of the resources

available to them. It cannot be successfully maintained that a given pattern of resource distribution in a locality condemns it to a specific growth rate.

On the other hand, and this is my final observation on this matter, it must be conceded that diversity of resources confers a special advantage. This is so because of the added flexibility this diversity gives to an economy. We live in a dynamic world of changing tastes and technology, and we face the necessity of continuously adapting to these changes. The added flexibility bestowed by diversity of resources facilitates adaptation to change, and this resiliency contributes to the maintaining of rates of growth.

No less important a conditioning factor in economic growth than natural resources are the economic institutions of the economy. There is such diversity of these and their features are so varied that I cannot deal with them by more than passing mention. Fortunately, in this area, my subject overlaps that of the previous speaker in some degree. The institutions of property and property rights, and the incentive institutions of the economic system, have profound effect upon economic growth and man continues to experiment in quest of improvements in such institutions. The associations, be they private corporations or public bodies, monopolistic or competitive groupings that we form for the conduct of productive enterprise, condition our economic growth. The great institution of the market and the price system have served well in many countries, at many phases of economic history in promoting economic growth, but it has well-known limitations, and we have sought to limit and supplement its operation in divers ways. Perhaps I ought, in passing, to make special mention of the institution of the capital market, and the specialized organizations devoted specifically to its functioning. The efficient administration of a payments system, and system for transferring funds from savers to dis-savers is of inestimable value in contributing to economic growth. It is these institutions, national and international, which permit the escape from barter, and offer the liberating effects of trade, and which vastly extend the scope for investment in capital. In this area too, we continue to innovate, and in Canada we are just now launching a major re-examination of our institutions and practices.

Mention of the adaptation of our institutions and practices leads me to the third heading in my catalogue of economic factors conditioning growth, namely economic understanding and policy. The changes in our institutions and practices are matters of economic policy, and wise economic policy is a matter of seeking to further economic objectives in the light of our understanding of the economic system. I think our understanding of economics has im-



proved over the years, and this should permit the adoption of wiser policies and contribute to economic growth. Whether it does or not depends upon how widely disseminated this understanding is among the voting population, and upon how great is the agreement and concentration upon the objective of economic growth. When all is said and done, economic growth is but *one* of our objectives; we have many others including increased freedom, leisure, security and industrialization. These may conflict with the objective of higher national income or output per head. At this point we come round 'full circle' because we began by recognizing that one of the factors conditioning economic growth is the extent to which people want economic growth.

The range of economic policies affecting growth is immense. It embraces our economic stabilization policy, for the greater the extent to which we keep our resources fully employed, the higher will be our average rate of growth. It embraces our tax subsidy policy in both its domestic and international aspects; it embraces our policy with respect to trading blocs that are formed and reformed in the world. It embraces our policy in respect of public versus private enterprise, our education policy, our research policy. This Conference is concerned with policy pertaining directly to renewable resources. Aspects of all the classes of policy I have mentioned impinge upon our use of renewable resources, and in that way, as in others, condition our economic growth.

This concludes my catalogue of economic factors conditioning growth. Before concluding my remarks, I should like to raise a set of questions related to the policy issues to be discussed here this week. Our topic this afternoon has been factors conditioning growth. I have interpreted this, and I think I have not been alone, to mean *economic growth*. Our discussions this week will center on policies pertaining to renewable resources. What are the objectives to be sought in policies respecting renewable resources? Is there *one* objective? Is it economic growth, as one might infer from the cast given to this plenary session? Are there others? What are they? The development of specific regions for the sake of such development? The development of the use of specific resources for the sake of such development? Is our objective to add diversity, as well as abundance to our life? If there are varying objectives, how are they to be reconciled? How are we to choose among resource policies that are directed towards the same objectives? What are the criteria by which we should judge the effectiveness of policies?

I am concerned that we should keep these questions before us at all times this week. There are difficult problems of choice to be faced; we cannot develop all resources at once, in unlimited degree. We have then to choose the degrees by which re-

sources are to be developed. We have to choose among alternative policies directed to given ends. We have to appraise, reappraise our policies from time to time. These problems of choice among objectives and among means are difficult; on the theoretical side, they belong in the realm of capital theory—one of the most complicated and underdeveloped branches of economics. But we must not lose sight of these problems this week, for if we do, the Conference will have failed in its objective described in the program as "the formulation of resource conservation and management principles, and broad guides to future action."

#### Discussant (Mr. DUBÉ)\*

In his report, Professor Hood willingly pointed out for us a multiplicity of factors that may affect the economic growth of a country and especially a country like Canada. Although extensive, he said, this list is only a catalogue. I could try to add to this list and to mention other factors, but I feel that I could not add very much to Professor Hood's substantial contribution.

In my opinion, what should be emphasized in Professor Hood's paper is that economic development shows up in many different ways and includes many elements. The relative importance of these elements may vary from time to time but may remain unchanged during a certain period. The growth process is a complex one which occurs under various forms. In short, economic growth depends upon countless factors impossible to enumerate completely, which form a more or less coherent whole and constitute a climate favorable or unfavorable to growth and progress.

There is, however, one aspect of the growth problem which strikes me with special force, and that is education and research in their broad interpretation. I feel that this is one of the most important aspects in the study of economic growth as it appears today in our country and in all countries of the world. It is one of the aspects which seems to stand out as a common denominator that could apply to all the factors mentioned by Professor Hood.

As a society grows economically it becomes ever more capable of attaining higher educational standards. In turn, its higher educational standard enables it to scale new economic and social heights. In such instances, the process is completely endogenous and is both the result and the cause of growth. Inasmuch as this process may become exogenous and be undertaken consciously by a society determined to grow, it is of interest to me here.

We are gathered here to consider the various aspects

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\* Translated from French.

of problems and government policies in the field of renewable resources. Resources, as the word implies, are concerned more with the future than with the present. This or that mining deposit, this or that forest wealth, this or that waterfall become resources in the *economic* sense of the word only if first of all a particular technique, resulting from research and often integrated in capital equipment, enables us to develop them. In short, the resources problem has more to do with man himself than with nature.

The development of our natural resources constitutes only one aspect of our economic development. Education has other implications for the whole of our economic system. It influences the type and quality of our labor force, the type of occupation fulfilled by labor and the character of the industries and institutions that we will be able to establish and maintain. It will affect the mobility of labor and other economic resources; it will strongly influence decisions of individuals as consumers and producers with respect to the portions of their incomes they consume or save. To a greater degree, education will enable the individual to understand the economic system in which he lives and its institutions, and it will determine the degree to which he will be able to adapt to them or to influence their progressive development.

The economic horizons of individuals, in space and time, are the result of the educational levels which they have attained. The Europeans came first, and then our southern neighbors, to invest capital and to apply techniques they had developed. They made a significant contribution in increasing our living standards and also in improving our technical knowledge. There are other obvious factors which came into play in this process, in particular the limits of our markets, the more or less monopolistic forms of production tariff restrictions, and so forth. But, our resources have assumed importance only because of technology, even though the technology originated elsewhere.

If we wish to fight this tendency of foreign economic penetration, which is assuming greater proportions, we must consider the struggle on the educational and research level as well as on the level of capital investment. It is not a question of replacing foreign technology with our own, but rather of trying to participate in the race by all possible means.

The educational level influences the type of capital at the disposal of an economy. Economists discovered long ago that the traditional division of production factors into land, labor and capital may be useful to identify certain types of factors, but that from the economic viewpoint this division is often artificial, and inadequate. When these factors are considered in the context of economic and technological evolution, we soon realize that they are all various forms of capital,

and that this capital may be increased by research and education. To realize our potential in economic growth, investment in human capital is as important as investment in physical factors.

Finally, higher educational standards have their most important effect on social life itself. We must look not only for growth but also for progress. The values of our society depend as much upon higher educational standards as do rates of growth, and are reflected in the amount and composition of our national product. Individuals in a society must have a reason for looking for progress, and must be able to choose what kind of progress they prefer.

One of the first observations made by Professor Hood was to the effect that, to progress, men must want to progress. Growth and progress are not automatic, because they result from action and from the will of men. If men are doing new things they must stop doing old things. The decision to do a certain thing must be conscious, and must be taken at the risk of certain sacrifices. This is probably one of the positive things that one may observe in nationalist movements: it is at the root of economic unions like the European Common Market.

For a number of years, Canada's economic growth was accepted as automatic. As a society, we may have tended to concentrate more on the problem of distributing income than on the problems of growth. Our resources were abundant and diversified, while our general economic and political climate was favorable. It now seems that this position may be questioned.

It should be recalled that economic liberalism was much more an economic philosophy of growth than an economic system in the true sense. We strained the system several times without minding much what was happening to the philosophy itself. We are now at a stage where it is necessary to make a choice, and this choice seems to be in the direction of democratic economic planning. We now have techniques and instruments which make this alternative possible and permit us to adopt a new economic philosophy. In this case as in others, the development of techniques may have preceded the development of institutions and policies. The main problem facing us is one of planning. Planning is the only instrument by which we may stabilize our economy on a short-term basis and promote our long-term growth, while preserving the objectives we, as a nation, wish to attain. The main hurdle is to organize planning in such a way that it will not dull the spirit of enterprise in the private sector. This is a political problem which we, as a nation, must endeavor to solve. Public discussion of these questions is highly desirable if we are to continue to live in a progressive society.

In this short report I have tried to lay particular



stress on certain economic, social and, in short, human benefits of education. Education is perhaps the most essential value if we are to attain our national objectives without serious problems. If we want a progressive economic society, Canadians must understand its implications, must contribute to it, must help define it and must even, at times, make sacrifices for the common good.

#### Discussant (Mr. GRAHAM)

I have found Professor Hood's and Professor Dubé's approaches to the subject very congenial and illuminating. I want to examine the qualitative aspects of economic growth. This necessitates saying something about *ends* as well as *means*. For an economist to consider *ends* is often regarded by economists as being unscientific; it is, in my opinion, unscientific not to consider them.

The method of measurement that is usually chosen to measure economic growth is that of using changes in the money value of production of goods and services, allowing for price changes to get measurements in so-called real terms, and allowing for changes in population by expressing these measurements on a per capita basis. This means that the money value of all final goods and services produced in a nation over a given period of time, usually a year, is included in measuring the production of these goods and services, and that in measuring growth, we measure changes in this value.

In estimating economic growth in terms of annual rates of production then, the economist measures everything by the same calculus of money value. A dollar's worth of education, or artistic endeavor, or housing, or parks, is counted as the equal of a dollar's worth of promotional advertising of soap, of rock-and-roll, or of mink-lined bottle openers. As growth is estimated in this way, no account is taken of the qualitative differences in kinds of goods and services being produced. We would get exactly the same result if the dollar value of education were reduced by a hundred million dollars, and the dollar value of promotional advertising were increased by a hundred million dollars.

Now this method of measurement and variations of it, as Professor Hood has suggested, are chosen because they are the best we know of, and they do—it must be recognized—have the virtue of indicating potential production and growth allowing for alternative composition of production. For in assessing priorities in terms of society's interests, however we determine these, we can say that if we did have more promotional advertising than we think should be produced, we could at the same time say that we could have had so much education instead by using the resources for this purpose, rather than for promo-

tional advertising. Such measurement is useful, therefore even if one does choose to take qualitative factors into account.

The point I wish to emphasize is that the qualitative composition of production not only largely determines the potential for quantitative growth; what is more important, it both reflects and determines the quality of society itself. Take the case of education, about whose importance in generating economic growth a good deal has been said today. Since education is, and should be, largely provided publicly through governments, rather than being determined by the market, the amount of it depends upon society's consensus as to how high a priority will be given to it. In turn, the quality of society will be ultimately determined by how high a priority is given to it.

Economists are concerned with the allocation of scarce resources of all kinds in such a way as to maximize the welfare of the members of society. A lecturer in the introductory course in Economics cannot get very far into his first lecture without making this kind of statement. We are concerned then with people both as the ends to whose welfare the utilization of all resources is directed and as the principal means of enhancing their welfare, for it has already been shown that the use of our natural resources, renewable or otherwise, and capital, depends on the knowledge and skill of human beings. Presumably, the greatest welfare is attainable in a society in which the highest human qualities are found. This being the case, it is one of society's main functions, through its institutions, to determine and give priority to those pursuits that are qualitatively superior.

Mr. Dinsdale's prediction, this morning, that this will be the most significant conference in this country since those conferences that preceded Confederation, can only be realized if this Conference leads Canadians to move according to a clear conception of what constitutes a good society, where necessary reforming our institutions to marshal our natural and other resources in both the public and private sectors to achieve that society.

If you have inferred from my remarks that I do not think that we presently have the kind of dialectical discussion in Canada that is conducive to the qualitative improvement in our society, and therefore to an optimum use of our resources, you have inferred quite correctly. As a result, we have no clear national objectives or policy in this country, and very little contribution to public enlightenment about these policies by those who are in the best position to make these contributions: our academics, politicians and press. We have not even come to grips with the much simpler problem of maintaining full employment on which, as Professor Hood has already

clearly stated, our quantitative growth in large measure depends.

Now, I should like finally to say something briefly about regional growth, a subject about which not very much has been said, but to which a good deal of attention is being given in this Conference.

In my view, regional economic growth should be considered in a national perspective; if it is not, the promotion of the interests of one region will be at the expense of other regions to the extent that the over-all production of goods and services (and therefore the over-all welfare of the nation) are reduced. I would agree too with Professor Slater's emphasis in his paper on trends in industrial locations, on the importance of growth of resource-based industries with respect to other industries, for the favorable economic development of a region. I think that what Professor Slater has in mind is that a region which is successful in effectively developing industries based on natural resources is likely also to be successful in developing other industries which may, or may not, be related closely to the resource-based industries.

At the same time, the economist's approach to the problem of regional economic development, or economic adjustment, has generally been couched in terms of mobility of resources. I would be the first to agree that a high degree of occupational and geographical mobility of resources is essential in a complex industrial society such as ours. In the case

of the Atlantic Provinces, however, a great deal of mobility has been experienced over a long period of time, almost a hundred years, and there is still a very large chronic surplus of labor that results in a great deal of economic waste. In a case like this, where after all measures have been taken to facilitate the largest amount of mobility that can reasonably be expected to take place, there is still a large surplus of labor, there are good economic grounds—apart from non-economic grounds that may be even stronger—for a certain amount of subsidization for the development of industry in such regions. This is an economic argument, not one based on grounds of national unity or of morality.

There is of course a danger, in subsidizing this kind of development, that the country may be impeding the mobility of some resources that might otherwise move from relatively unproductive uses. But since the decisions to locate many types of industries are made essentially on non-economic grounds anyway, it would seem that this would be an area where public policy could play a very useful role in attempting to nudge industries that would be reasonably well-located in such regions into locating there. The danger that I have mentioned of distorting allocation of resources still exists, but against the possible economic waste from such distortion must be set the certain economic and social cost of chronic unemployment and underemployment that will otherwise be incurred.

*Workshops*

*Tuesday, October 24, 1961*





# *AGRICULTURE*

Tuesday, October 24 and

Friday, October 27, 1961

“We need agencies at all levels that have a specific focus on agricultural development. This need not involve a rigid or standard type of agency at all levels, but it may in most instances require new agencies. In fact, variations will be dictated by environment and attitudes. But only when such focus is provided, and only when agencies at all levels are equipped through integration and co-ordination will we begin to deal rationally with our agricultural resources.”



# Agriculture Workshop A

TUESDAY, October 24

## Land maintenance and improvement.

- Chairman:** D. R. CAMPBELL, Head, Department of Economics, Ontario Agricultural College.
- Co-Chairman:** A. LEAHEY, Associate Director of Program (Soils), Canada Department of Agriculture.
- Lead-Off Speaker:** MEYER BROWNSTONE, Deputy Minister, Saskatchewan Department of Municipal Affairs.
- Discussants:** J. A. ROBERTS, Director, Agricultural Engineering Branch, New Brunswick Department of Agriculture.  
E. A. OLAFSON, Director, Conservation and Development Branch, Saskatchewan Department of Agriculture.
- Rapporteurs:** K. E. LANTZ, Director of Extension, Ontario Department of Agriculture.  
J. R. PELLETIER, Scientific Liaison Officer, Research Branch, Canada Department of Agriculture.

### INTRODUCTION

The background papers on land supply and technology suggest that, although there are reserves of land, these are not our best soils, and that we are losing some of our soils to other uses. Furthermore, we are not maintaining fertility on our good soils. Technology holds great promise for increased soil productivity but there is a chronic time lag between availability of techniques and their adoption because of a lack of incentives. On the whole then, an adjustment and development program may be faced with a scarcity of land and a need to accelerate widespread adoption of techniques for intensifying production.

The papers suggest that the farm firm and the farm as a social unit and as a part of a community are exposed to pressures of low income and low productivity and of unplanned social disintegration. This suggests that agricultural development needs a foundation of economic and social values, principles and properly oriented programs.

#### Lead-Off Speaker (Mr. BROWNSTONE)

Historically, our approach to the problem of maintaining and improving land has suffered from two limiting aspects.

First we have been limited in our perspectives and planning context. We have, for example, observed the loss of land and fertility through urban expansion,

erosion, flooding, and through "soil mining," and have initiated preventive or curative programs on these grounds alone. We have experienced low farm productivity and poverty on inferior soils and have initiated resettlement and rehabilitation programs within agriculture. We have constructed irrigation projects largely because the water was there and drought was a problem.

Such limited points of departure have provided the basis for much of our land maintenance and improvement in Canada. In fact, one might suggest that our entire program in agricultural production has been similarly circumscribed. The difficulty with this approach to resource development is that it ignores factors that are in most cases of fundamental importance. We will explore these shortly.

Our approach has suffered from a second disability. It has involved only limited co-ordinated participation of the many kinds of interests in a development program ranging from the individual to national and international interests. In part this has resulted from divided jurisdiction but, as will be suggested later, such conditions need not bar a co-ordinated attack. The result has been a fragmented agricultural development with little if any national policy and a great range of provincial policies.

Turning to the first of our limiting aspects let us attempt to broaden our perspectives by talking about demand and supply.

An evaluation of demand prospects, particularly in domestic terms provides a bright picture for the future of agriculture. A combination of population and income growth suggests a growth in demand for food and other agricultural products. By 1980 there should be a 70 per cent increase in the volume of food consumed domestically. It is also estimated that world food demand will increase 80 per cent by 1980.

The composition of demand will change largely as a function of consumer income. Thus by 1980 meat consumption should double and, related to this, grain fed to livestock should increase by 60 per cent.

It should be emphasized that, optimistic as these projections may appear, they are based conservatively on no major changes in public policy on food distribution or income redistribution. Demand projections, therefore, suggest a reasonably firm base for a major expansion in output and a reallocation of our agricultural resources to changing consumption needs. These demand projections are long run in nature and, although we do not propose to deal with them here, short-run problems in demand will as usual provide their "ups and downs." Also, we should not be unaware of our problems in commercial foreign markets, particularly those that may result from the European Common Market.

To explore the possibilities of satisfying expected demand we must examine our supply-technology complex. Here we may make a number of categorical observations:

(a) In Eastern Canada the land base is shrinking through outright abandonment and absorption into other uses. More generally our land base is shrinking through a decline in soil productivity related to fertility and erosion losses.

(b) There is a large acreage of potentially usable land but it is of relatively low quality on the whole and costly to develop.

(c) Technological development, if adopted, would permit a 70 per cent expansion in over-all crop production. Plant breeding could raise this to 85 per cent. However, the possibilities for adoption of these developments are linked to profound problems surrounding public policies, farm organization, and information-education services. Furthermore, given the normal rate of technique adoption by the industry, it is necessary to accelerate fundamental research in technology to keep pace with demand.

(d) As an indication of the unexploited potential of our better soils it has been estimated that present output could be maintained with a removal of 20 to 25 million acres of our less productive soils.

(e) Family farming predominates in Canadian agriculture as does operator-ownership of land. A

large segment of agriculture is small scale, under-employed and restricted in its ability to adjust in scale and in use of resources.

To summarize the demand and supply background with reference to the problem of this Workshop, demand—even conservatively estimated—will rise substantially by 1980 and will rise even more if public policies improving national and international food distribution are put into effect. This means that we will need to intensify the use of our agricultural resources, perhaps by 100 per cent.

There are a number of possibilities for such adjustment.

(a) The area of agricultural land could be expanded—the Canadian potential is 41.5 million acres.

(b) Use of occupied agricultural land could be intensified through physical works (irrigation, drainage, land clearing); through more widespread application of known technology (cultural practices, soil management, better breeds, pest and disease control, farm management); and through addition of livestock production.

(c) Problem soils could be retired and use of better soils intensified.

These then are the salient aspects of demand, supply and technology that are necessary background for treatment of the problem of maintaining and improving land. It should be noted categorically that the background, complex as it may appear, has not been filled in completely. There is a complex set of public policies, including tariff policy, transportation policy, and general fiscal policy that have profound effects on resource development. No policy of land maintenance and improvement should be constructed without consideration of these influences.

The second limiting aspect in our traditional approach has to do with organization. This includes an incomplete consideration and involvement of the individuals, groups and jurisdictions concerned with agricultural land. It also includes lack of integration, particularly within government jurisdictions.

It should be clear that many interests are concerned in land maintenance and improvement.

The *individual* is the main actor. It is he who actually makes the ultimate adjustment, and in a society with our set of values he should be a full participant and fully aware of the implications. The *farmer* throughout Canada presents his views through his own *organizations* which become or should become deeply involved in land problems locally and nationally. *Local jurisdictions*, because of their local nature and their flexibility, can provide useful organizational service. Furthermore, programs involving land maintenance and improvement often



have grave implications for people and services within local jurisdictions. The *provinces* have jurisdiction over resources, property and civil rights. They are vitally concerned with the position of farmers, the agricultural industry and the use of resources. The *federal government* has wide responsibilities for income, employment, international trade, and fiscal policy. All these jurisdictions and interests are related to land maintenance and improvement. But at present there are gaps in involvement and a lack of definition of roles.

Within each government jurisdiction there are problems of a different order. Effective land maintenance and improvement requires integrated, or at least co-ordinated effort from a number of directions. At the federal level, and in many of the provinces, such integration and co-ordination exists (if at all) only at cabinet level. The federal legislative-administrative organization for the use and management of agricultural resources is administered by ten departments. Complete integration may not be possible, but greater integration combined with effective co-ordination is a realistic objective. Some provinces have developed agencies with specific agricultural resource orientation, but even in these cases their scope is restricted within departments and certainly between departments.

This, then, is what we find in approaching our problem—a rising demand situation, a system of farm organization and tenure that presents difficulties for a development program, ineffective information-education programs, a number of choices in production alternatives and profound difficulties in our policy and organizational framework. How then can we go about our task of devising an effective program of land maintenance and improvement?

It would seem sensible to suggest that such programs should be adequately and rationally justified. This proposition should hold at any level of activity—governmental, group, and individual. Obviously it is not just a question of motivation, but rather what kind of motivation. It is suggested here that six general conditions provide justification for programs of land maintenance and improvement.

(a) Increased output is required, based on demand. Such increases must be defined specifically so that the resource needs may be identified. In some instances, development of a resource may be justified to anticipate future demand.

(b) A change in composition of output is required. The expected shift in the direction of livestock products, fruit and vegetables is a case in point. Here is clear evidence of a need to modify the use of our agricultural resources.

(c) Stabilization of output is required because of the effects of instability on supply and on farm

income. There are a wide range of physical development programs available to perform this task. However, stabilization should not be confused with (a) and (b) above. Irrigation may provide a potential for stability, but it may destabilize by creating problems of oversupply. Similarly, programs of resettlement based on clearing and breaking may develop better farming units, but may also create an overabundance of resources in agriculture.

(d) In some cases, agricultural development may increase the net benefits of multi-purpose projects. Thus the value of a major water reservoir may be increased by addition of an irrigation project to power, recreation, and urban water supply projects. By itself the irrigation project may be unjustified economically.

(e) Agricultural development may be undertaken primarily to stimulate and stabilize general economic growth in the region. Agricultural development provides an important avenue for public investment in resource development as an essential factor in economic growth and in securing economic stability.

(f) Land maintenance and improvement can be used to achieve greater productivity for individual farmers. Here, again, such activity must be undertaken with the over-all demand or market situation in mind. If, for example, no increase in total demand is anticipated, then increasing output per farmer is not justified unless the number of farmers is being reduced. Unfortunately, much of our traditional policy has failed to take into account both sides of the equation.

No program of land maintenance and improvement should be undertaken without examining its purpose in terms of the possibilities just reviewed. If it is, then the subsequent action may be ill-designed since a clear statement of objectives is missing and since objectives may well be conflicting.

We come now to actual program phases. What are the desirable principles or criteria that should shape the actual program?

The first principle is related closely to what I have just discussed. It is that programs of land maintenance and improvement should be based on pre-development research and planning on physical, economic, social, governmental and developmental aspects. The reference here is primarily to the discipline of a rational, planned activity which does not necessarily require elaborate organization for carrying out the function. In other words, the principle applies both to the farmer who is faced with an individual development possibility and to governments planning large-scale, complex developments. This principle should not be abandoned simply because there are technical gaps in our research and

planning. We should follow the principle of thorough predevelopment planning as far as we can and at the same time make efforts to fill the gaps.

This kind of comprehensive, disciplined approach is deplorably underdeveloped in Canada at all levels of government, within organizations and on individual farms. The shortcomings, although sometimes disastrous, have apparently not been impressive enough. The real cost of some developments has been staggering in terms of public and private investments.

Only when predevelopment research and planning are carried out effectively are we in a position to apply the second principle. It suggests, first, that the development program should have regard to a systematic evaluation of the results of predevelopment research and planning as a basis for action. Second, it suggests the participation of governments and individuals involved in all phases of development. If this is not done, as is typical, then the program will be frustrated by misunderstanding and friction caused by incomplete and ineffective information and participation.

The third principle states that land maintenance and improvement should be developed within a framework of national and provincial policy, with ample provision for provincial, regional and local flexibility.

The fourth principle states that a land maintenance and improvement program, particularly one dealing with physical works or projects, requires participation of local, provincial, and federal jurisdictions. Roles may vary from program to program, and these roles should be defined.

The whole question of an institutional framework for agricultural resource development is of the highest priority. Little hope for substantive improvement can be expected unless an adequate legislative-administrative framework is developed. The shortcomings of our present arrangement have already been referred to, but they deserve repetition and expansion here.

The first shortcoming is policy determination, federally and provincially. At the federal level efforts have been made recently to develop and put forward policies of this order in the Agricultural Rehabilitation and Development Act. This is a significant breakthrough. But formulation is incomplete and, to some extent, inconsistent. In particular, the framework for federal planning and co-ordination remains undefined. The policy implies federal assistance largely on the basis of provincial discretion and action, but is silent on the continuation or extension of the Prairie Farm Rehabilitation Administration as a federal action agency.

Policy at the provincial level is both well focused

and elusive. It is focused because of provincial jurisdiction over resources. It is more elusive because it is unco-ordinated, and relevant programs are scattered through departments of government. Policies do vary from province to province, but this is no particular deterrent to the formulation of an agricultural development policy in each province.

The second shortcoming is organizational, both within jurisdictions and between jurisdictions.

The problem within jurisdictions is twofold. Facilities for dealing with agricultural development are incomplete, and they are not organized to do an adequate job. Perhaps the best way to illustrate this point is to suggest that what is required at federal and provincial levels is an agency that will administer the program directly, or co-ordinate elements in an effective manner. With the possible exception of one or two provinces, this kind of facility does not exist in Canada. If it did it could look after the second kind of internal problem; that is, seeing to it that the missing resources and disciplines in a development program are provided, either in the agency itself or in a related agency.

Problems in relationship between jurisdictions exist at provincial-federal and provincial-local levels. This is explained in the first instance by the lack of a federal policy and organization and by great variation and lack of co-ordination in the provinces. In the second instance, that is, provincial-local, there are two aspects. One exists where little effort has been made to encourage and develop a local role. The other exists where local responsibilities have been assigned, but the local authorities are either inappropriate or poorly designed.

To put the matter as succinctly as possible, we need agencies at all levels that have a specific focus on agricultural development. This need not involve a rigid or standard type of agency at all levels, but it may in most instances require new agencies. In fact, variations will be dictated by environment and attitudes. But only when such focus is provided, and when agencies at all levels are equipped through integration and co-ordination, will we begin to deal rationally with our agricultural resources. The changes required should not be minimized. To take one important example, the federal level, it should be fairly obvious that a new administrative organization is needed, focused on agricultural development. It should probably incorporate, as an engineering action agency, the presently largely isolated P.F.R.A. It should include skills and disciplines capable of the kind of planning discussed previously. It should administer federal aid on the basis of a well-conceived policy. It should provide national leadership and co-ordination. It should insist on consideration of agricultural implications in the framing of related federal policies.



**Discussant (Mr. ROBERTS)**

According to the 1956 Census of Agriculture, Canada has about 100 million acres of land cultivated for the production of crops. In addition to the acreages now in use, between 10 and 15 million acres of land can be considered as potentially arable. These latter lands, which still remain to be put into use, are generally considered to be of inferior quality. Moreover, a sizeable portion of the cultivated land may be considered as submarginal for food crop production and should be diverted to other uses such as recreation or the production of trees.

Since most of our good agricultural land is now under cultivation, it is only through the maintenance and improvement of this land that we are going to feed ourselves and those dependent upon Canadian exports.

Most of the cultivated land is owned and operated by individual farmers. As individuals their first concern is to make a living. In most cases, they are interested in physical works for land maintenance and improvement only if the works result in an increase in farm income through greater and more efficient production.

Some large-scale land development projects such as those carried out under Prairie Farm Rehabilitation and Maritime Marshland Rehabilitation Acts are necessary. These enable individual land development projects to be undertaken to correct the results of improper land use or to allow lands to be cultivated more intensively. But for best results a program of physical works designed to promote good land use and conservation on the part of the individual farm is of prime importance. In the case of large-scale projects financed by public funds, this is essential if full utilization of these lands is to be achieved.

This has long been recognized but it must be admitted that outside the areas covered by the Prairie Farm Rehabilitation Administration there has been a marked reluctance on the part of the Government of Canada to become involved with works on individual farms.

#### *Existing programs for the maintenance and improvement of land*

Examples of provincial government participation in works involving the individual may be found in all Canadian provinces. Besides providing technical and financial assistance some provinces have been actively involved in the operation of earth-moving equipment for physical works on individual farms. At present the trend is for provincial government agencies to limit their assistance to the provision of technical and financial aid.

Most provinces provide assistance to farmers for the maintenance and improvement of their lands in

some or all of the following projects: land clearing, land drainage (both open ditch and tile under-drainage), soil erosion control, irrigation, soil fertility, reforestation, woodlot management, etc.

Expenditure of public funds to assist individual farmers to maintain or improve their farms through the construction of physical works for drainage, land clearing, water supply, erosion control and other projects is generally considered a justifiable investment in the agricultural resources of the area and an incentive to maintain and develop them for future use.

Thus the principle of governmental participation in physical works for land maintenance and improvement had been firmly established both at the provincial and federal levels. Government participation has not necessarily been limited to large-scale projects but has included such projects as those involving water storage for individual farmers in Western Canada or the removal of stone piles of 50 cubic yards for New Brunswick farmers.

#### *Large-scale projects*

At this point it might be well to discuss briefly the operation of two large-scale programs, emphasizing the importance to both of physical works on the individual farm. Most Canadians think of P.F.R.A. as being an organization devoted to such large-scale projects as the St. Mary and the South Saskatchewan and do not realize that over \$19 million has been expended on small projects, many of them classed as individual water development projects. From 1935 to 1960 P.F.R.A. spent over \$7 million on 52,417 individual farm projects.

Being more familiar with the operations of the Maritime Marshland Rehabilitation Act, I would like to present some details as to the principles used in its establishment and operation, and to relate these principles to similar projects of physical works for land maintenance and improvement.

The tidal marshlands of Nova Scotia and New Brunswick were reclaimed by the original French settlers in the 17th Century. Dikes and other protective works were maintained by the occupants of the land, with little or no assistance from governments until the passage of the Maritime Marshland Rehabilitation Act in 1948. These people sought government aid only when the task of reconstructing the dikes became too great for their resources.

Failure to introduce a program of this nature would have resulted, not only in the loss of 90,000 acres of productive land, but also the loss of entire communities, with disastrous effects on the economy of many municipalities.

The Administration established under the Maritime Marshland Rehabilitation Act did an excellent job of

combining modern engineering techniques with the experience gained over centuries of dike construction. The Advisory Committee principle worked extremely well and it may be safely stated that public funds were expended wisely.

The provinces have fulfilled their part of the agreement and within their capability farmers have made satisfactory progress in land development and utilization on an individual farm basis.

The inability of government advisors to arrive at a means of mechanizing field drainage operations probably has delayed the development of the area more than any other single factor. This problem has now been at least partially solved—and at a cost of less than one-quarter of one per cent of the total investment of public funds in the project. This clearly illustrates the necessity not only of *selecting land development projects wisely*, but also of *predevelopment work and attention to small details* that do so much to make a project successful.

The success or failure of major physical works projects for the maintenance or improvement of land will be determined by their effect on the people who will ultimately use the land to produce crops. Evaluation of projects by means of cost-benefit ratios usually assumes full land utilization. If for any reason utilization is delayed, the economic worth of the project is seriously reduced. A study of land utilization techniques should, therefore, be included in the over-all prior study of any major project.

### *Provincial programs*

Experience in New Brunswick is more or less typical of land maintenance and improvement programs in effect across Canada. The topography and drainage of most agricultural areas in the province is such that it is extremely difficult to find an "ideal" farm, located on well-drained, productive and relatively level land. Instead, farms are for the most part located on rolling hillsides, subject to water erosion. These rolling fields often contain natural wet-weather springs that delay cultivation and impede the efficient use of farm equipment.

New Brunswick farmers striving to improve their farms frequently face considerable outlays to correct the mistakes of their ancestors. Rock piles were scattered throughout the fields, fields were divided into small parcels by fence rows and little thought was given to the most efficient layout of farm field roads.

The New Brunswick Department of Agriculture has from time to time introduced policies designed to help farmers correct the physical difficulties imposed by the conditions outlined above. These policies were designed to raise the efficiency of production by elimination of wet spots in fields, removal of stone piles and fence rows, control of gully and sheet

erosion, relocation of field roads and other similar work. Land clearing when carried out was not designed to increase the amount of farm land but involved brush removal to improve permanent pastures.

Since the farmer pays a substantial share of the cost, these policies are good examples of the self-help type of project. Without government assistance little of this work would have been done.

During the past ten years equipment owned or subsidized by the Department has worked on approximately 13,000 farms. This has resulted in the installation of over 2,500 miles of open ditches; the clearing of approximately 18,000 acres; general improvements . . . involving over 125,000 hours of bulldozing work; construction of a million feet of diversion terraces, and the installation of 2.5 million feet of tile underdrainage. This amounts to a considerable volume of work on a per-farm basis and has been of major assistance in helping farmers increase the efficiency of their field operation.

Policies and programs such as those outlined above help to:

- (1) Maintain the soil resources of the area.
- (2) Assist farmers to adjust their programs to meet present-day challenges.

### *Summary*

A physical works program for land maintenance and improvement is needed in order to supply Canada's food needs in the foreseeable future.

Such a program should be directed toward the maintenance and improvement of lands already under cultivation.

The success of any physical works program for land maintenance and improvement will be determined by:

- (a) The care used in evaluating the project. In this phase evaluation by means of cost-benefit ratios and economic studies should be balanced by a thorough study of the intangible though very real benefits.
- (b) The care used in the initial planning and in-progress development. In planning a project, care should be taken to include a study of problems facing the individual who ultimately uses the land to produce crops.

Emphasis should be placed on programs designed to maintain or improve lands owned and operated by individuals. Most provincial authorities have considerable experience in the development and operation of such programs. The incorporation of the self-help principle in all programs involving the individual is essential.

In closing, I would like once again to stress the



importance of developing land maintenance and improvement programs at the individual-farm level. These programs are essential for the full utilization

of land reclaimed or developed by major projects as well as the maintenance and development of land in areas where no major project is involved.

## DISCUSSION

In discussion the group arrived at the following background assumptions:

1. An increase in output of 70 per cent will be required over the next 20 years to meet domestic and foreign demand, with present ratios of imports and exports to production.

2. Only a limited expansion in the agricultural land base is economically feasible under price and other conditions envisaged over the next 20 years.

3. Increased output must come from improved technology and management, and from land maintenance and improvement. As technological and management improvements may not be sufficient, land maintenance and improvements are likely to be necessary to satisfy the growing demand for food.

4. Increased efficiency of production will be necessary to compete with foreign agriculture.

Relevant to the situation as indicated by the Background Papers and the above assumptions, major objectives were outlined as follows:

1. Improve efficiency of agricultural production.
2. Stabilize output in the face of natural hazards such as drought, flooding and erosion.

3. Contribute to improvement in general economic and social conditions, on a regional basis and in the nation as a whole.

4. Convert land from present uses to other uses from which operators derive higher incomes.

5. Protect our land and water resources for multiple or diversified purposes.

In developing operating principles it was recog-

nized that programs of land maintenance and improvement should be studied on:

- (a) Physical aspects;
- (b) Economic aspects (including benefit-cost analysis);
- (c) Social aspects (for example, effect of development on farm family and community);
- (d) Governmental aspects (for example, effect of development on local government);
- (e) Developmental aspects (for example, timing of development, administration, division of responsibilities, financing);
- (f) Self-help aspects (for example, involving the individual and the community).

It was recognized that full consideration must be given to all of these aspects, where relevant, on the basis of desirable effect on individuals, the community and the nation.

The Workshop accepted the conclusions set forth in his summary by the Discussant, Mr. Roberts.

It was felt desirable that land maintenance and improvement should be developed within a framework of national policy and provincial policy with ample provision for provincial, regional and local flexibility. The land maintenance and improvement program, particularly one dealing with physical works or projects, requires participation of local, provincial and federal jurisdictions.

It was recommended that a national policy be established on agricultural land and water use, based on regional requirements and developed by an Advisory Committee of provincial and federal representatives.

The discussion ended on this recommendation.

## REVIEW AND CONCLUSIONS

### AGRICULTURE WORKSHOP A

October 27, 1961

The Workshop reconsidered the assumptions, objectives and principles developed during the Tuesday Workshop in the light of discussions on Wednesday and Thursday, and decided that the report of the Tuesday Workshop needed no revision. It then proceeded to discuss the formation of a national policy

and the responsible agencies for initiating and implementing projects connected with agricultural land and water use.

The Workshop agreed that it is highly desirable that a national policy on agricultural land and water use, including consideration of regional requirements,

be developed. Such a national policy on agricultural land and water use should be developed in relation to other resources as part of an over-all plan for all renewable resources.

An institutional framework or organization is necessary to draft a national policy for agricultural land and water use. The Workshop agreed that such an organization should consist of a continuing committee including all provincial and federal Ministers of Agriculture, and that this committee should have a permanent secretariat.

The Workshop considered the relationship of ARDA to the continuing committee responsible for developing a national policy for agricultural land and water use. It was agreed that the latter should act in an advisory capacity to ARDA by developing broad principles and guidelines for the activities of ARDA.

At this point there was some discussion on one restriction contained in the ARDA legislation and it was agreed that the Act should be amended in Section 4(1) a (i) to delete the words "for agricultural purposes" in order not to interfere with the possible multiple-purpose use of water.

Discussion then centered on the relationship of ARDA to P.F.R.A. and M.M.R.A. and the Workshop agreed to note with appreciation the development in P.F.R.A. and M.M.R.A. of a body of engineering skill and competence regarding land and water development, and to recommend that, in particular, the engineering services of P.F.R.A. and M.M.R.A. be continued. It was suggested that the above services be made available as requested to other provinces and that, where applicable, P.F.R.A. and M.M.R.A. become operational arms of ARDA.

With regard to projects under a national policy of agricultural land and water use, the Workshop ac-

cepted the important principle that the initiation of projects is a provincial responsibility. Provinces should encourage new or existing local and regional organizations to initiate projects and contribute to them where applicable.

Another important principle in organizing projects for land maintenance and improvement is that when projects are undertaken jointly by different levels of government, the financial responsibility should be shared through a division of the total cost of the project and not by the division of the project itself into different parts, each of which would be the responsibility of a different government. In principle, upon termination of projects of physical works, the operation and maintenance should be a provincial or local responsibility.

Research relating to government projects or aimed at improving farm practices is the responsibility of all levels of governments, universities, and private institutions. Projects and research should be oriented to embrace all possible uses of land and water and the employment of people.

The Workshop emphasized that in the development of a national policy on agricultural land and water use, and in the implementation of projects, a program of public information and education is an absolute necessity. Too many programs in the past have not had an adequate public understanding, and have been less effective as a result.

The Workshop recognized that most of the land maintenance and improvement carried on in Canada is and will be done by individual farmers and that all levels of government have a responsibility to remove obstacles and create incentives to encourage farmers to follow improved practices of land maintenance and improvement.

# Agriculture Workshop B

TUESDAY, October 24

## Adjustment on land in agriculture.

- Chairman:** F. W. WALSH, Deputy Minister, Nova Scotia Department of Agriculture and Marketing.
- Co-Chairman:** R. G. BENNETT, Chief Agricultural Officer, Ontario Department of Agriculture.
- Lead-Off Speaker:** CHARLES LEMELIN, Professor, Faculty of Social Sciences, Laval University.
- Discussants:** J. S. PARKER, Director General (Administration), Canada Department of Agriculture.  
G. A. KRISTJANSON, Senior Rural Development Specialist, Manitoba Department of Agriculture.
- Rapporteurs:** R. C. HODGES, Chief, Soils, Land Use and Land Classification Division, Hunting Surveys Corporation.  
G. FORTIN, Professor, Department of Sociology, Laval University.

### Lead-off Speaker (Mr. LEMELIN)\*

In summarizing the Background Papers, I am fully aware that I will not do justice to the excellent scholarship displayed by this consortium of experts. Each paper is literally bulging with statistics and other factual information, revealing an intimate acquaintance with the problems discussed, but my summary necessarily must be brief.

From the contributions of Messrs. Menzies, Shefrin, Drummond and Shebeski we learn that by 1980 meat consumption in Canada will have increased by 100 per cent; the requirements for feed grain for livestock will be 60 per cent higher; the volume of food consumed will have increased by 70 per cent. In addition, the expected increase in world population will bring about a firm demand for cereals, especially in developing countries.

Other papers indicate that the potential of Canadian agricultural production, already high, can be improved considerably. According to Messrs. Leahey, Drummond and Bentley—and even Mr. Richards in so far as organic soils are concerned—the arable land is largely sufficient now and could be increased by applying appropriate techniques of land improvement and reclamation.

Messrs. Weir, Downing, Bentley and Richards are no less definite concerning the technological pos-

sibilities in matters like soil fertility, plant breeding, animal husbandry, and mechanization. There seems to be a consensus among these experts that it is preferable to increase by appropriate practices the productive capacity of land already cultivated rather than to increase the acreage of arable land.

Mr. Shebeski is perhaps more pessimistic. He considers land to be really the “scarce factor.” If the future demand for agricultural products is to be satisfied, nothing should be neglected to increase the total productivity. Each factor must be used efficiently so as to maintain a high degree of productivity per acre. Only with reluctance should land already in cultivation be allocated for uses other than agriculture.

All these authors—but Dr. Weir in particular—stress the fact that the application of this promising technology in agriculture will require considerable financial resources and much skill in farm management. Messrs. Drummond, Menzies and Shefrin—and in a sense Mr. Shebeski also—dwell on the necessity for appropriate policies to cope with the present surplus and the often adverse economic conditions affecting the farmer, so that long-run goals of agricultural development can be achieved.

To conclude my review of this particular group of papers, I should like to add one personal comment.

It seems to be implicit in several of these analyses

\* Translated from French.



that the farmer is unable to make use of various technological improvements now available in agriculture because it would be uneconomical for him to do so. Many farm programs provide the farmer with a type of aid that favors maintaining and increasing the fertility of land as well as improving farm management practices. However, the type of credit now available in agriculture does not permit a generalization of the best technical improvements, especially mechanization.

The papers of Messrs. C. C. Spence and H. K. Scott, J. E. Gilson, D. W. Carr, G. Fortin, and of W. B. Baker and D. D. Solomon are, I believe, more directly related to the particular problem we are discussing. But, in order to determine the exact points to be stressed, I have had to redefine in fuller detail the topic assigned to the group.

The Conference organizers suggested three headings under which the topic should be discussed:

1. Adjustment on land unsuited for farming;
2. Agricultural adjustment;
3. Adjustment on land in agriculture.

In selecting the material that I will present I have formulated the topic as follows:

Considering land as the basic factor, it seems relevant to investigate the best method of combining the other factors of production with this scarce resource in such a way as to satisfy technical, economic, and social requirements; the immediate objective being to enable the farmer to operate efficiently, the ultimate objective the welfare of the farm population.

Messrs. Spence and Scott, in their analysis of land-use planning and development, point out some mistakes in past settlement policies. From the experience of the Prairie Farm Rehabilitation Administration and other similar programs, these authors infer that it is difficult, but not impossible, to carry out a planning program that reconciles the individual farmer's interests with those of society. They say that the mistakes in planning policies will be minimized if appropriate research is conducted regionally in matters of soils, climate, and plant breeding, and if the information so obtained is used as a basis for economic research on farm management.

A parallel is drawn between the migration movements associated with the homestead policy and the displacement of farm families effected by readjustment programs such as the Special Areas Act of Alberta (1921), the Land Utilization Act of Saskatchewan (1935), and especially the Prairie Farm Rehabilitation Act (P.F.R.A.) passed by Parliament in 1935.

Mr. Gilson's contribution, entitled "Strengthening the Farm Firm," is perhaps the most aggressive of the papers summarized here. He, in effect, puts the

family farm "on the grill." Of the many definitions, he accepts for his purpose one describing the family farm as a farm where:

The operator makes all or most of the management decisions;

The farmer and members of his family supply most of the labor;

The farm resources suffice to provide the family with at least an adequate minimum level of living;

Tenure is reasonably secure.

He demonstrates that according to statistics the number of Canadian farms corresponding to this definition is insignificant. He compares the family farm with other types of farming, i.e. corporation farming, the production co-operative, the collective farm, and the traditional plantation system. Mr. Gilson thinks that owning the land deprives the farmer of financial resources that could more profitably be invested in machinery and livestock. An unbiased look should be taken at the possibilities of a farming system where the operator could, like the factory worker, be able to draw an income from production without having to purchase the equipment. Whether workers in agriculture under a corporate- or factory-type of production would fare any better than under a family-farm pattern of production cannot be ascertained at present. Concluding this section, Mr. Gilson points out that the small size of the family farm and methods of financing the business, make it difficult to adapt to major technological and economic changes.

Mr. Gilson states that technological progress has changed farm management from an art to a highly complex science. He mentions also the all-important matter of capital in the adjustment of farms to modern technology. Another problem is the difficulty for farmers to adapt to the rapidly changing socio-economic conditions. The most convincing paragraphs of Mr. Gilson's study relate to the beginning farmer, the security problems of the retiring farmer, the financing of the farm firm, and the hired-labor problem. Like Mr. Fortin, Mr. Gilson deplores the lack of research on the attitudes and motivations of the operators of low-income farms.

To conclude, the author describes in much detail a number of policies and programs intended to strengthen the farm firm. I leave it to you to examine this part of his text. It contains many suggestions which will certainly be excellent topics for discussion.

I now come to a difficult turning-point in my summary. I have in mind the article by D. W. Carr, entitled "Resource Adjustment in Agriculture: Effects of the Legislative and Administrative Framework." This paper is a clear statement of a rather complex problem. Because it is not easy to disentangle the



jurisdictional, the economic, and the purely technical in the subject matter, I prefer to make no comment or interpretation.

"Social Effects of the Evolution of Canadian Agriculture" is the title of the paper by Gerald Fortin, my friend and colleague from Laval University. The analysis is a sociological one. This paper assumes that the agricultural population will decrease. It was thought, in the beginning, that the Conference would consider mostly adjustment on land unsuited to agriculture and Mr. Fortin was thus brought to study the effects of such adjustments on the emigration from agriculture. His analysis is based on several research projects which he has conducted personally in the Quebec rural areas.

From his observations, he tries to establish more general principles explaining this migration. The process is analyzed in terms of accelerating or retarding factors. Retarding factors are: existence of certain ethnic and religious groups; influence of agricultural organizations; influence of political parties; and difficulties encountered by the farmer when he tries to get established in an urban area. Accelerating factors are: disappearance of rural isolation and especially the penetration of urban values in rural areas; degree of industrialization in a given area, that is to say, the availability of other jobs that may be taken by the farmers whenever they abandon farming; and awareness that such jobs are available and farmers' ability or lack of ability to fill these jobs.

Mr. Fortin analyzes implications of agricultural emigration to the social organization of the rural community. Finally he stresses the need for research and careful planning before an agreement is reached on farm emigration policies. Among the specific comments, attention is drawn to the following which seems of importance. Should agriculture provide them with a sufficiently high standard of living, most rural families would continue to prefer farming. Whereas the farmer of old disregarded the need for education, farmers today are more and more concerned with education as the key to a better standard of living and stable employment. Mr. Fortin shows that for Canada as a whole, rural communities have a larger number of non-agricultural than of agricultural people. This points to the importance of regional planning and rural development projects.

The author observes that some problems have not yet been solved, among them that of properly redirecting the emigrating farmers. Should the rural population be encouraged to migrate toward the large centers, or should it be directed toward smaller centers scattered in rural areas? According to Mr. Fortin it is perhaps better to support on farms some farmers who may not be needed now from an economic viewpoint but who may be needed in a not-too-distant future when the long-run

demand for agricultural products will require increased supply.

Messrs. Baker and Solomon have described the task of extension and education as a means of facilitating the execution of policies in general. I wish to stress one point which seems fundamental: planning becomes feasible in a society such as ours, where governmental controls are at a minimum, only if individuals personally participate in discussion of policies as well as in carrying out the chosen programs.

Like Baker and Solomon, I am optimistic about the fundamental qualities of the Canadian farmer. It is our task, as administrators and experts of all categories, to co-operate in the adequate use of this invaluable human resource.

#### Discussant (Mr. PARKER)

In giving consideration to implementing a program of adjustments on land in agriculture one encounters the problem of responsibility. Whose responsibility is it to initiate and follow through with desirable adjustments? Can this be clearly stated or can the responsibility be defined? At the present time I doubt that it can be.

Legal interpretations of the British North America Act have raised serious jurisdictional barriers to optimum agricultural resource use. One section of the Act indicates that both federal and provincial governments may pass laws respecting agriculture, but if conflict should occur, federal legislation is to take over. On the other hand, another section of the Act makes management and sale of natural resources a provincial responsibility. By the same section, jurisdiction over property and civil rights is reserved to the provinces; but provincial resource responsibilities were qualified by the Act which gave the federal government authority over trade and commerce.

The responsibility for agricultural resource management in Canada is divided among the ten provinces and the federal government. As a result, progress in this area is dependent, in many cases, on complex intergovernmental co-operation. Certainly there is evidence that effective regulation and adjustment is not impossible by this means, but progress in developing programs has tended to be, in the opinion of many, slow.

Certainly the *ad hoc* programs of P.F.R.A., M.M.R.A., those under the Water Conservation Act, and the special resource development policies operating in recent years from Newfoundland to British Columbia have served a useful purpose. But there has not been a uniform action policy, and agricultural resource development has lagged behind what many believe to have been necessary.

Background Papers have pointed out that the giving of priority, in 1954, to federal jurisdiction over interprovincial and international truck transportation

may have placed a new interpretation on some confusing sections of the British North America Act. It is presumed from this reference that the responsibilities for agricultural resource development might be clarified or delegated in the same manner.

If this Conference were to agree that responsibility for agricultural resource development should be placed with the federal government, I do not believe that this would be acceptable to all provinces. On the other hand, the development of agricultural resources, including adjustments on land in agriculture, will require a considerable expenditure of public funds and I doubt that all provinces would wish to accept, for financial reasons, this responsibility. The adjustments we are discussing today are of national concern and will require national effort.

It may be desirable, in the long haul, to clarify responsibilities for agricultural resource development, and perhaps action should be taken to pursue a solution to the basic problem—perhaps an agreeable solution satisfactory to the people of Canada can be found. In the meantime I believe that policies to implement adjustments on land in agriculture must be developed and put into effect in a spirit of co-operation by those agencies and governments concerned—local, municipal, provincial, and federal.

It would appear that the recently passed Agricultural Rehabilitation and Development Act (ARDA) will serve as an instrument within the jurisdictional confines of the British North America Act for the purpose of carrying out a program of adjustments on land in agriculture. The Act provides for, and requires, co-operation at all levels of government. It permits the co-ordination of effort of all federal departments of government which may be involved in solving particular adjustment problems. Its effectiveness has yet to be established; working arrangements have yet to be developed. Its use, in an atmosphere of complete co-operation and co-ordination, will implement, I believe, effective adjustments on land in agriculture, whether the desired specific goal be the raising of the standard of living of low-income farmers, the proper use of the basic soil resource, or the planned control of agricultural production. I suggest that the Agricultural Rehabilitation and Development Act is a tool through which, by proper and well-considered use, a desirable end product will be produced.

I have attempted to point out that although the responsibility for resource development may not be clearly defined in the constitution under which we work, I believe that a framework is present and through the co-operation of all concerned adjustments on land in agriculture can take place if Canadians really want it.

With regard to administering programs of adjustment, I believe the situation is similar.

I question that a program can be administered in an exactly similar manner for or by each province. Conditions or circumstances vary—perhaps ten ways—and the detail of administering the programs must be worked out in a spirit of co-operation by all groups, agencies or governments taking part.

I do not propose to outline or review why adjustments on land in agriculture are required or what is involved in making adjustments or to outline an action program involving adjustments. These points, I presume, will arise during today's discussions.

#### Discussant (Mr. KRISTJANSON)

Let me start by emphasizing that I will be dealing primarily with the adjustments in the so-called "problem areas." I will further limit myself to the human resources rather than attempting to comment on the adjustments of all the renewable resources. However, in discussing the human resources reference will of course be made to the natural resources as well. No single resource, be it human or natural, can be developed in isolation.

Three of the Background Papers have particular relevance to the human adjustments necessary in a changing society. These are: "Social Effects of the Evolution of Canadian Agriculture," by Professor Fortin; "The Role of Agricultural Extension in Comprehensive Resource Development," by Professor W. B. Baker and Dr. D. D. Solomon; and "Problems of Cultural Adjustment in Relation to Northern Resource Development," by Professor H. B. Hawthorn.

The first two have particular significance to this Workshop. I mentioned Professor Hawthorn's paper because it shows so well how different the adjustment problems are in the northern regions than those of the more settled areas. An excellent report.

I will comment briefly on the papers by Fortin and by Baker and Solomon. I will not refer to the other papers specifically because you have summaries of them and our lead-off speaker has further summarized and commented on them.

Professor Fortin must be complimented for doing a very fine job on a difficult task. Almost every Background Paper makes reference to the need for additional research information. No doubt such need exists. But just imagine the vacuum that exists in rural sociological data when the number of rural sociologists in Canada can be counted on one hand; and prior to the early 50's you didn't need to count at all.

Professor Fortin has done an excellent job of showing the evolution of the community studied and of generalizing as far as he could. In my opinion he has generalized to the fullest extent possible but did not go overboard.

The only criticism concerns some of the questions Professor Fortin raises. For example he says that



since it would be difficult 40 or 50 years hence to attract people back into agriculture, there may be merit in retaining more of them on the farm. Here I feel that he has failed to take into account that if there is a need for more agricultural people 40 to 50 years from now, the agricultural conditions will be vastly different than they are now. Of course, he simply posed this as a question.

Baker and Solomon have put forward six principles which are in your summary papers. I am in whole-hearted agreement with these principles but would like to expand on them a little to emphasize points that the authors in some cases missed and in other cases made only by implication.

1. *Development depends on the emergence of appropriate attitudes and goals.* I suggest that knowing the predominant values and goals would enhance the implementation of a given action program.

2. *Voluntary local organization is needed to link farm families with research and policy.* The reverse of this is also true, i.e. there is need of linking research and policy with farm families (particularly in the area of applied research).

3. *Education through extension acquires added impact by unified local program planning.* I want to point out the contribution that local program groups can make to regional, provincial and national planning.

4. *Education through extension must be guided by professionally competent extension educators.* Here I simply want to doubly underline the word *guided*. A fantastic amount of extension education can be carried out by local people with a limited amount of professional guidance. Every community has dedicated people who seem to possess the *art* of leadership.

5. *Education through extension should be based on a sound foundation of physical and social research.* A good deal of work normally done by social science researchers can be done by local people. We in Manitoba have used local farmers to collect data within their own areas. Our experience was that many kinds of data can be gathered just as effectively by these local people as by trained interviewers. Further, this can be a very important tool of involvement for future action programs.

6. *The central organization for agricultural extension must provide an adequate supporting structure.* Here they have accepted the present structure (and assumed it will continue—a safe assumption, I am sure). However, the authors do some wishful thinking and I gather would prefer to have a structure more like that of the U.S.A. I'm not sure their

wishing would not be reversed if they were on the American side of the border.

In expanding on these principles I have been trying to get one point across: We must never forget that education is a two-way proposition. Any teacher who learns less than his students is not teaching.

Commenting on the papers in general, several point out the overlap and conflict of administrative policies and the need for an integrated and smoothly operating administrative organization. Certainly we must strive for the best organization possible, but do not expect it to reach the point of perfection where conflicts and frictions never occur. If this point is reached, we will have an organization of human robots capable of mechanical manipulation but completely sterile of ideas and initiative.

No doubt there is room for improvement, but in the meantime, let's not hide behind administrative red tape to veil our own inadequacies.

#### *A note of warning*

If we are doing long-range planning we must be extremely careful not to be overly influenced by conditions of the day. There seemed to me to be some evidence of this in some of the papers. This is a fairly common failing and we must always be on guard against it.

#### *Where do we go from here?*

Development programs can be classified in two broad categories.

1. Those programs that depend upon the creation of new resources in the area involved through such things as building dams to provide water for irrigation, hydro, recreation, etc. This is really a creation of new resources in the area involved and usually requires a tremendous amount of capital being invested in the program. I would suggest that the T.V.A. project is of this nature.

2. Self-help or shoestring development that depends largely upon local initiative and capital with a minimum amount of outside assistance. It is programs of this type that, in my opinion, we are most apt to consider. For example, the thinking behind the ARDA program seems to be along these lines.

Both types are useful but the approach to each is quite different.

#### *Let's face facts*

If long-range development is to take place this implies planning. Planning for the development of resources, to be effective, must be done on at least three levels:

1. Federal—for the general development of our national resources;

2. Provincial—to fit the program into the various provincial economies;

3. Local—to adapt the programs to the conditions, needs and attitudes of local people.

The planning groups in numbers 1 and 2 above must be of an interdisciplinary nature and must have the time to devote to planning. Planning cannot be done on a part-time basis by people who are already loaded with other responsibilities.

Many of our so-called "marginal" areas are overpopulated in relation to the available natural resources. If the residents of these areas are to attain adequate levels of living, a large number of the

present population will need to be attracted out of the area. In order to do this we need an educational program similar to the one in operation after World War II to help these people reach the academic standing that will enable them to take advantage of existing trade and technical training programs. Such a program must be flexible enough that it can be fitted into the needs and conditions of the people of these marginal areas.

One last point: Any development program of the self-help type has to be planned on an area large enough to include supramarginal areas that may not now be developed to the highest degree possible.

## DISCUSSION

The Workshop accepted the assumptions and principles discussed in the morning session with the understanding that modifications might be made subsequently. The following problems were named:

(a) The present use of land and the changes in agricultural use of land have not been established on a planned basis.

(b) What is to be done with submarginal lands?

(c) The need for adjustment on operating farms, whether in submarginal or supramarginal areas, requires attention.

(d) Limited alternate opportunities are available for farmers to engage in other forms of employment.

It was emphasized that good land is being taken out of agricultural production for industrial, urban and other purposes, with little controlled planning in many parts of Canada. Local, provincial and federal governments and their agencies, with or without the power to expropriate land, are the agencies involved. There are bottlenecks with respect to their decisions which are often political.

A number of examples were given of policies under which agricultural land was being changed to other uses by such programs as community pastures, both federal and provincial, and reforestation.

In regard to the abandonment of submarginal lands, it was noted that both economic and social pressures were significant controlling factors. Adjustments are taking place on many individual farms. Agencies are assisting in these adjustments through research and extension services, organizations of various kinds—government, co-operative and private.

Many participants stressed that we must recognize the significance of people in the social and economic sense, as well as the physical features as they affect land use. The crux of the farm credit problem seemed

to be that the public does not accept the distinction that credit should be reserved to those with management skills rather than being made available to anyone who applies. The problems to be faced in considering the adjustments in the use of land are the size of farm properties, the proper use of the land according to its capability, and the necessity for a farm business to be able to adjust to the changing economic conditions.

It was the consensus that major adjustment in the use of land implies an increase in total agricultural productivity. In addition, this implies the need for equal emphasis in meeting marketing problems.

It was stated that it is necessary to review existing and future agricultural aid programs to ensure that they do not aggravate or maintain uneconomic farm units or practices. Existing legislation concerning alienation of Crown land appears to be outdated in some cases. Four factors require consideration in developing new policies to govern the alienation of Crown land in order to assure efficient and successful farming in the future. These are that the size of property must be variable, and it must depend on the capability of the land, the regional context, and the location of the particular parcel. The management skill of the applicant must be considered as well as his financial competence. These considerations applied regardless of whether the land was alienated in fee simple or on a lease basis.

Physical and economic classifications of land are essential for any kind of adjustment in land use. Four points reiterated from Gilson's paper were:

(a) Programs are necessary to assist the outward migration from submarginal areas.

(b) Supervised credit is essential.

(c) Long-term planning of land use based on research is necessary.

(d) Government may be required to buy land in low-income areas.



It was suggested that in one sense time was on our side in the problem of correcting land use in sub-marginal areas. Social and economic pressures in time do effect changes without the need for costly crash programs. Through zoning to prevent additional settlement in undesirable areas, depopulation will occur of its own accord.

It should be understood that other countries are prepared to fulfill the agricultural needs of Canada. In some respects competition among farm producers is not within our national limits but with other countries.

The real need is to help the farmer who is in a sub-marginal situation, either to extricate himself physically from that situation, or to make adjustments that will enable him to achieve economic success on his present location.

The following impediments to land adjustment

were recognized:

- (a) Cost of necessary surveys.
- (b) Costs of purchasing submarginal land for conversion to other uses.
- (c) The problem of assisting people who may be displaced through such a program.
- (d) Lack of adequate credit facilities for areas considered worthy of rehabilitation.
- (e) Inadequate methods of rural land assessment and taxation as they affect land-use adjustments.
- (f) Inability of farmers, because of lack of technical knowledge and desire, to effect the necessary adjustments on their own.
- (g) Lack of proper training, including teaching facilities, for farmers and their families who may be required to move from agriculture to other occupations.

## REVIEW AND CONCLUSIONS

### AGRICULTURE WORKSHOP B

October 27, 1961

In later discussion, the Workshop approved the addition of two points that were omitted from the foregoing report:

(a) There was concern expressed about the effects of increasing capitalization in industry and other sectors of the economy which affect the economic position of the farmers.

(b) There is a need for research into the problems of interim economic adjustments in the short run as well as into the problems of adjustment toward long-range goals.

The participants adopted the revised assumptions and principles that formed the basis for the discussions and conclusions of the Workshop.

#### *Assumptions*

1. Adjustment on land in agriculture implies the most desired and effective use of land, and improvement in the welfare of rural people.

2. Adjustments are required in the use of land and in the organization of social and community organizations, including local government.

3. The organization of production and the use of labor can be modified to expand or reduce output of certain products.

4. Demand projections and land-use capabilities provide a basis for planning adjustments in agricultural production to meet expanding and changing consumption needs.

5. Long-run demand projections (20-40 years) pro-

vide a basis for a major expansion and shifts in production, but short-run pressures on demand do not support the need for policies and programs that would expand production.

6. Family farming predominates in Canadian agriculture and will continue to do so in the foreseeable future.

7. The adoption of known scientific knowledge and proven practices on a wide scale can increase production by 50 to 100 per cent.

8. Adjustment may involve shifts of people and will require policies to facilitate such movement and necessary relocation.

#### *Principles*

1. Adjustment requirements in agriculture can only be assessed and defined in relation to the whole complex of national and international conditions and policies, economic and social.

2. Policies and programs designed to bring about adjustments necessary to the long-run interests and needs of society may not fully meet the economic and social needs of farm families in the shorter run. Problems thus created should be considered in assessing and planning the total framework of agricultural policy.

3. Social and economic considerations merit the development of clearly defined governmental policies that will enable farmers to adjust to changing conditions.

4. Adjustment on land in agriculture should be developed within a framework of consistent national and provincial policies, with provision for provincial, regional and local flexibility. Policy determination should provide for participation by the levels of governments concerned and by rural people involved.

5. Programs of agricultural adjustment should be based on research and planning on:

- (a) Economic aspects (in terms of both individual farmers and the industry, national monetary and fiscal policies, etc.);
- (b) Social aspects (effect on rural people, etc.);
- (c) Physical aspects (soil research, land-use potentials, etc.);
- (d) Development aspects (financing, timing etc.).

6. Special consideration should be given to developing policies that will raise the educational level of rural people.

After some discussion of reports from earlier sessions the Workshop formulated the following recommendations for the consideration of the Conference Steering Committee:

1. It is necessary that each province compile all its existing information and data pertinent to the use of land.

2. These data should be evaluated by the provinces and the evaluations integrated on a national basis with a view to achieving uniform standards.

3. The evaluations will indicate the need for additional surveys and research to complete the inventories.

4. Land should not be indiscriminately released from agriculture for other uses without consideration of its quality for crop production, since the production of food and fiber has a high priority.

5. Land unsuitable for cultivation should be shifted to other uses, either agricultural or non-agricultural, in order to increase economic productivity and improve social conditions.

6. Policies involving the purchase of land are essential to facilitate the adjustment of the use of agricultural land units of large or small size.

7. Any program involving the relocation of people must provide for both financial assistance and retraining. Facilities for retraining must be made available locally and be adapted to local conditions and current employment prospects.

8. There is a need for assistance to individual farmers to help them make adjustments in the use of land on their own farms.

9. A successful rural development program requires that we achieve a balance in carrying out research and extension in the physical, economic and social aspects of land use.

In addition to the above recommendations that were unanimously adopted, the following opinions were expressed:

(a) The province must retain control of the land resources.

(b) Adjustments on land in agriculture will be greatly influenced by the Agricultural Rehabilitation and Development Act program. This program is primarily agricultural in nature and its implementation should remain in the hands of agriculture rather than in that of any proposed national renewable resources council.

(c) It is impossible to discuss land-use adjustment without taking cognizance of the importance of economic growth and development. ARDA is a new major concept in agriculture and in its implementation the complexity of the total economic framework must be recognized.

# *FISHERIES*

Tuesday, October 24 and

Friday, October 27, 1961

"The very nature of fishing rules out the degree of stability in employment, prices and incomes which many other occupations enjoy. Whether this is, on balance, more an attraction to the venturesome than a deterrent to those who value security cannot be readily answered. What is needed is an environment in which the *level* of incomes is sufficiently attractive to make the choice an economically feasible one to a labor force able to move elsewhere if necessary."

*J. A. Crutchfield, "The Role of the Fisheries in the Canadian Economy," Resources for Tomorrow, Vol. 2, p. 751.*





# Fisheries Workshop A

TUESDAY, October 24

## Maintaining adequate stock.

- Chairman: NORMAN BALDWIN, Executive Secretary, Great Lakes Fishery Commission.
- Co-Chairman: E. M. GORMAN, Deputy Minister, Prince Edward Island Department of Fisheries.
- Lead-Off Speaker: K. H. DOAN, Chief Fisheries Biologist, Fisheries Branch, Manitoba Department of Mines and Natural Resources.
- Discussants: A. L. PRITCHARD, Director, Conservation and Development Service, Canada Department of Fisheries.  
W. A. CLEMENS, Department of Zoology, University of British Columbia.
- Rapporteurs: GUY LEBLANC, Secretary-General, United Fisheries of Quebec.  
W. E. RICKER, Editor, Fisheries Research Board of Canada.

### Lead-Off Speaker (Mr. DOAN)

My observations and remarks are almost wholly confined to freshwaters and to the fresh water phases of otherwise marine fishes. There are others who are highly qualified to discuss stocks of sea-fish. The ecological approach has been used; man as well as fish are creatures in a natural environment, but man's modification of his environment in the search for food and comfort has in many instances been harmful to fish. And there are more and more indications that man's continued and sometimes thoughtless changes wrought upon the land, water, and surrounding air will react to his disadvantage.

Fish are very sensitive to changes in their surroundings; more so than man, who is the most adaptable of creatures. Their feeding, growth, movements and reproduction are retarded if water temperatures are too high or too low, if they lack dissolved oxygen, or if water in sufficient amounts is denied them. In fact, they are frequently used as test animals in water pollution studies, because they are so sensitive to alterations in environment. The most highly prized kinds of fish, salmon and trout, have the most stringent requirements, and, as water quality becomes impaired, less desirable kinds of fish take over. We now have in Canada some water that will not support any fish at all.

### *Suitable environment required*

The theme of these remarks is that in order to maintain adequate stocks of fish we must provide

suitable environment for fish. The connection seems so self-evident as to require no elaboration. In the settled parts of the country, where fishing opportunities are in highest demand, quality and quantity of water have declined most markedly, and continue to do so.

Canadian history is replete with examples of impairment of natural waters. Not only have local recreational and industrial values been destroyed, but a spawning river's contribution to subsequent lake and ocean fish catches is a requisite for many kinds of food and sport fish. The resource is not renewable when reproduction is denied. Projected demand will not be met when the basic requirement—good water—is diminished.

### *Man changes the environment*

While it is recognized that all waters are undergoing gradual changes, geologically speaking, human activities have greatly accelerated the process in many instances. Modifications in kind and amount of water effect permanent changes in stocks of fish. The extreme would be—no water, no fish. On the other hand, overfishing is only a temporary condition from which stocks may recover fairly rapidly after fishing effort has been decreased, as long as water conditions remain suitable. Their immense reproductive capacity endows fish to respond fully to favorable conditions for survival. However, there will always be an upper limit to production because of restrictions in space and basic fertility in every body of water.

There is little prospect of large scale manipulation of ocean conditions to favor increased stocks of fish. Lakes and rivers, in contrast, can be preserved and improved for fish production. This should be realized and accepted by all elements in our society, because everyone benefits from a reliable supply of good water. An aggressive policy of positive water conservation, meaning wise use, is required.

The essential aquatic environment is beset on all sides by many influences, many of which are detrimental to fish habitat; most arise from human activities.

### *Agriculture*

Agricultural operations have a most direct bearing upon the maintenance of water supplies. Admittedly, a basic national requirement is an abundant food supply. But, cannot this be met with a more widespread adoption of practices which ensure better water? Growing plants and livestock require water, and it would appear prudent to take more positive steps to meet future requirements. Indiscriminate clearing and breaking of land raise water temperatures and reduce the continuity of flow. Erosion from farm surfaces is a double loss, reducing the crop potential as well as smothering fish feeding and spawning grounds. Water storage dams for irrigation and flood control have been a noteworthy effort of the federal government, but loss of fish should be avoided in the diversions and drawdowns. Agricultural chemicals have not generally been as carelessly abused in Canada as elsewhere. Overgrazing destroys vegetative cover and compacts the soil, and is especially harmful in headwater areas.

In some provinces, water control is almost wholly from the agricultural standpoint. The objective seems to be to drain water off the land as quickly as possible. There is little regard for continuity of streams, and maintenance of bank cover, bottom and temperature. An annual cycle from flood to dust is promoted. Fish and wildlife wetlands have been drained, sometimes at high cost and with little benefit to the national economy, rather than increased to meet future demands.

### *Forestry*

Unwise forestry practices have denuded many headwaters and some stream valleys by clean cutting and fires. Selective logging on a continuous yield basis, and clean cutting of pulpwood only in strips, offers more protection to the ground surface and water supplies. Log driving and dams have in the past severely damaged fish runs. Pulpmill bark and chemical effluents are often, as in mining, a result of the first industrial probe into otherwise virgin water systems. Life in such new communities would be more amenable without fouled water. The need of careful

use of forest insecticides has already been brought to public attention.

### *Mining*

Besides adding chemicals and suspended solids to lakes and rivers, some mining operations seem to have been centers of destructive forest fires, and some types of noxious fumes have eliminated much local vegetation. In the days when a mine could be given unrestricted freedom in a large isolated area there was not too much cause for complaint, but even the wilderness is fast disappearing today, and tomorrow new generations will require every facility for food, materials, and recreation.

### *Waste disposal*

As more people crowd into industrial centers, and urban growth spreads in the surrounding countryside, there will be more need of recreation like fishing. Even today, the proportion of sportsmen is increasing faster than the population as a whole. Yet it is near these centers of population that opportunities for fishing are declining, as industrial and domestic wastes offer greater and greater problems of disposal. More complete waste disposal at greater costs will be required to protect man from his own products, and it may eventually be regarded as morally wrong to pollute water. An ethical conscience might be a stronger deterrent than legal admonitions.

### *Power dams*

The generation of hydroelectric power does not necessarily pollute the water. But great dams can and have blocked essential runs of spawning fish, and fluctuations in water level in the forebay have been deleterious to some stocks of fish. An enlightened policy of multi-resource use would give full consideration to mitigating methods and devices, to the end that present and potential stocks of food and sport fish would be maintained.

### *Transportation*

In the transportation field, pollution from ships should be controlled. Economies in road maintenance are effected by prompt coverage of raw earth with vegetative growth. The ever-extending road network, which brings increasing numbers of people to participate in the harvest of the fish crop, would then not contribute to the destruction of stream quality by erosion and silting from its slopes.

### *Discussion topics*

I offer four items for discussion, concerning maintenance of adequate stocks of fish by maintenance of an adequate environment for fish.

#### *1. Agriculture*

The most gradual of man's large scale effects upon environment, and also one of the most permanent in



an expanding economy, comes from tilling the soil. Unrestricted and sometimes unwise tree removal and land breakage have led to the development of areas of economic and social depression. This has been recognized in the new Agricultural Rehabilitation and Development Act. This Act makes provision for many things, including development and conservation of soil and water resources in agricultural areas. It also promotes recreational development. Its terms are quite embracing, and it would seem to offer assistance in restoration and maintenance of environmental conditions suitable for fish, in so far as restored tree and ground cover would promote better water supplies. The Act may be applicable to commercial fishing, to increase employment opportunities in agricultural areas.

One of the most powerful forces shaping the use of land in private ownership is the annual municipal tax bill. It is a statement and a demand. Unless it is met, the owner will lose the property. A normal reaction to mounting taxes is to break more land, if available, to drain and cultivate wet areas, to increase the livestock on rough land, and to intensify cultivation and cropping. None of this will preserve or increase the water supply, and much of it will eventually be harmful to stocks of fish. If those who despoil water should be expected to pay for their actions, should not downstream users who benefit from good water also contribute to maintenance of favorable headwater conditions? Can land tax concessions or grants be made for headwater impoundments, improved ground cover, fenced stream valleys, undrained natural marshes and bogs, and preservation of cover on steeper streamside slopes?

## 2. Law enforcement and uncertainties

As to pollution, why is Section 33 (2), Chapter 119, of the federal Fisheries Act not seriously enforced everywhere in Canada? This Act prohibits the addition of deleterious substances to water frequented by fish. What is the legality of an act like the Mining and Metallurgy Compensation Act of Manitoba which specifically exempts mines from damages arising from operational discharges?

## 3. Water quality standards

Do environmental sanitation sections of some provincial health departments take too lenient a view on the quality of discharges of domestic and industrial wastes? Should not these standards be higher, to protect the environment for fish and recreational pursuits?

## 4. Cost of pollution control

Can the policy be adopted of making the cost of water quality preservation, especially in discharges, a more realistic item in municipal and industrial

waste disposal? The costs should be borne by the users of the water. At first glance they may appear high, but estimates have already been expressed that one cent per day per capita could make a tremendous improvement. A penny a day keeps pollution away. Why should some fisheries have to suffer, by reduced stocks and production, from abuse of water by previous users?

Fisheries administrations are exposed to frequent complaints when fish stocks are reduced by loss of quality and quantity of water, and go to some expense for surveys, bio-assays, etc. They are in the untenable position of being forced into a relationship with something—water pollution—over which they have no real control. Some provinces are in a weak position to effect improvements in the aquatic environment when raw wastes are discharged from some of their own provincial institutions—jails, hospitals and universities.

## Discussant (Mr. PRITCHARD)

It seems to be desirable, at the outset, to review the points which I think have been raised in the basic papers, having application to this subject.

1. *There is obviously a good reason for endeavoring to maintain adequate stocks of fish in Canadian waters.* Even though we recognize that fisheries occupy a relatively small place in the gross national product—about \$200 million—they do have a unique position. In the development of the country, fishing was usually the first industry which was developed. At the present time we still have 75 to 80 thousand people dependent on the industry, directly or indirectly. We must realize that many of these people will resist sudden transfer to other industries, if indeed they can be transferred at all. In addition, in our present economy, we have larger and larger numbers of people who are concerned with fishing for recreation. There is no doubt this trend will become more and more important. Thus, even though the strictly financial returns may be proportionately small, the social implications are great.

There is another compelling reason to maintain stocks of fish in that it surely is agreed that no resource, no matter how small, should be destroyed without reason if the country is to get the best use of its natural endowment.

2. *The demand for fish will continue.* Even though the future for a much-expanded production is limited, there is no denying the fact that fisheries products will continue to be in good demand. This is obvious as the feeding habits of people cannot be changed overnight and more and more people must be supplied with protein food. As indicated above, the recreational demands are still increasing.

3. *Can we maintain the stocks to meet the demand?* Dr. Ricker's paper certainly makes it clear that we

can maintain present levels of production and he is optimistic enough to indicate that substantial increases can be obtained in certain areas through judicious management.

4. *What are the problems in maintaining stocks of fish?* If a close review is made of the presentation it will be obvious that the problems of maintaining stocks of fish arise in two definite areas, namely (a) within the industry itself and (b) outside the industry.

(a) *Problems within the industry itself*

Even though at the present time complete information is not available, it is obvious that over-fishing or improper control of fishing can reduce stocks. This is true of all species but more particularly of those which are of relatively local distribution. For instance, in the case of the lobster, which in general remains in an area within one to five miles of its origin, heavy uncontrolled fishing can easily reduce the stock to economic extinction. Similar situations arise, of course, in the case of such organisms as clams. On the other hand, it is not impossible for heavy fishing to severely deplete the stocks of pelagic and migratory species such as the cod and salmon.

In these circumstances, therefore, it is essential that the fishing operations be regulated. It is now accepted that these regulations should be soundly based on available scientific knowledge. We still have a long way to go in the field of research to have data that is complete on which to base regulations. We may have been remiss in not educating the fishermen themselves on the necessity for regulations in various areas and, of course, we may have failed in enforcing such regulations. We must, however, have the facts, the appreciation, and take the appropriate action because these steps are all certainly essential.

(b) *Factors outside the industry*

It is clear that anything which changes water will change the environment for the fish, either for good or for bad. Fish therefore must be considered in the general context of other resources, e.g. agriculture, forestry, mining. This is the *multiple-resource approach* to development and is the only sound attitude. On the Atlantic Coast and in fact in all areas where the water is occupied by fish and particularly in fresh water, it must be recognized that every effort has to be made to lessen the effects of civilization as they change water quality. This means, of course, that we have to carry out stream improvement and in fact use any other procedure to keep conditions suitable for the fish to propagate and live. We naturally can influence these conditions more readily in land areas. For

this reason we insist on fishways, stream clearance and control of pollution.

In summary, therefore, granted that stocks of fish are essential and beneficial, two tasks face us in the maintenance of fish stocks:

1. To control the fishing industry in such a manner as to give a sustained yield and a spawning stock;
2. To co-operate with other industries to prevent destruction of fish stocks yet permit the best development of all resources.

It is maintained by some that the legislative basis to do this is either not available or is not sufficient. As a matter of fact, fisheries legislation is unique in that legislative jurisdiction in both coastal and inland fisheries was vested in the federal government at the time of Confederation. Since that time, by agreement, some of the provinces administer the fisheries within their boundaries but they do this under federal legislation. On the other hand, civil and property rights, under the British North America Act, are the responsibility of the provinces. It is obvious that in carrying out this responsibility the province may, in fact, follow a course of action which will damage fish. This situation has, however, been overcome through the development of close co-operation between the federal fisheries authorities and the various provinces. At the moment, because all recognize the effects which might result from unilateral action, there is almost day-to-day consultation and consideration. While this arrangement is not covered under legislation, it is effective.

It would seem that not because of any particular wisdom on the part of the individuals concerned, but rather as a result of circumstances, the necessity for co-operation was recognized and has been implemented. The framework for multiple-resource development is thus present in the case of fisheries. It can be improved. It is essential that it be expanded and that all the problems be considered in the most objective manner possible with a view to finally attaining the best development of all resources.

**Discussant (Mr. CLEMENS)**

I take it that our consideration today is essentially biological, and this makes my task in dealing with conditions on the Pacific Coast fairly easy.

After 50 years of investigation and research the fishery biologist understands the principles involved in maintaining an adequate stock of fish. He knows that when a fishery commences on a virgin stock of fish the catches in the early years may be relatively large and consist of a relatively large number of older and larger fish. If the fishery is continued intensively the size and ages of the fish in the catch may decrease, and if continued for some time the stock



may be so decreased that fishing is no longer economically successful. The biologist may follow the course of the fishery and advise the Department of Fisheries of its state before the extreme economic condition is reached, and the Department may regulate the fishery so that the catch corresponds to the recruitment and the stock, and the fishery is eventually maintained so as to provide an optimum annual yield.

A fishery is really a biological experiment involving close co-operation between the fishing industry, the Department of Fisheries, and the scientists. On the Pacific Coast, the industry, the Department of Fisheries and the biologists all understand the situation pretty well and are attempting to maintain the various fisheries on a sound basis. Biologically the situation is good, but the difficulties are economic and sociological.

For example, the fish could possibly be caught by one-tenth the number of men now employed, the capital investment greatly reduced and the quality and diversity of the product greatly improved. But there are difficulties. What might be done with the non-necessary fishermen? If we were in a communist economy the men might possibly be sent to the Arctic on various projects. But we live in a democracy and we do not do things that way. We have strikes, and fish stocks may be underfished. Market conditions may result in difficulties. Slowness in technological developments may retard the demand for fish.

Let us take a look at the Pacific fisheries. The three main ones are for halibut, herring and salmon.

*Halibut* is under the jurisdiction of the International Pacific Halibut Fisheries Commission, which has:

- (a) Investigated the life history, including growth, reproductive capacity, movements, etc.;
- (b) Established a good system of catch records;
- (c) Set up areas with a quota of catch for each;
- (d) Set quotas maintained or altered according to indications of extent of stocks and market conditions; and
- (e) Maintained some surplus for emergencies.

*Halibut* regulation represents a good example of an attempt to regulate a fishery on a sound basis.

*Herring* has been under intensive study for the past 30 years and the situation is well in hand. At the present time there is probably a surplus of stock, due to underfishing which was the result of strikes and poor market conditions. The herring fishery is under a flexible quota system and is being watched very closely.

*Salmon* presents a much different problem. The salmon fishery is much more complicated than others and it is difficult to establish data on the extent of stocks. Some of the difficulties are embodied in the following points:

- (a) Five species are involved, each with its peculiar life history;
- (b) All five species spawn in fresh water and die after spawning;
- (c) The outgo of the young from a lake or stream is often no indication of the amount of return of the adults;
- (d) They travel extensively in the ocean, traverse international waters, making it difficult in some instances to get adequate statistics of the catch—for example, spring salmon.

The International Pacific Salmon Commission has operated on the Fraser River in respect of sockeye and pink salmon and has increased runs of sockeye salmon to that river steadily and very materially. It has established a basis for regulation by:

- (a) Constructing fishways to provide clear passage for all the populations proceeding to the various spawning grounds;
- (b) Establishing good records of escapements to the various spawning areas;
- (c) Recording the production of fry and smolts in one major area;
- (d) Establishing a good catch record of the various populations.

The Director of Investigations for the Commission has a difficult task in estimating the extent of the runs of returning salmon each year, providing for an escapement of each population of 20 to 30 per cent and providing an equal division of the catch between Canada and the United States.

The Fisheries Research Board of Canada has a somewhat similar investigation of sockeye salmon on the Skeena River.

The problems of the salmon fisheries are many. For example, there is the matter of dams for hydro-electric development, dams for flood control, and dams for irrigation projects. No solution has been found for the construction of high dams or for the multiplicity of dams on one river and the maintenance of salmon stocks.

The problem of pollution looms large in the future with the growth of human populations and greatly increased industrialization.

The fertilization of large lakes and the selection or hybridization of salmon stocks are economically impossible at the present time.

Improvement of spawning grounds and creation of new or artificial spawning grounds appear to offer good possibilities.

Continuous investigations are needed, particularly with regard to the amounts of stocks.

There is need for a sound, well-directed program of oceanographic studies to provide some degree of information for prediction of the success of salmon sur-



vival in the ocean and the relation of ocean currents to salmon growth, survival and routes of travel.

Prospects for the continuation of the fisheries on the Pacific Coast are good. The fishermen in general understand the principle for maintaining adequate stocks and are co-operative. There is good liaison among fishermen, the Department of Fisheries and the fishery biologists.

## DISCUSSION

The Workshop, in dealing with the problem of maintaining adequate stocks of fish, accepted as a basis for its discussions four categories of demand:

1. *Continued high* for species such as lobster, salmon, etc., in which the demand might be considered almost unlimited;
2. *Substantial increase* for species in which the demand might reasonably be expected to double in the next 20 years;
3. *Increase*;
4. *Decrease*.

These categories were assigned to species on the basis of the forecasts in the working papers and the opinions of participants. The Workshop recognized the possibility that species not now of major importance might become so but did not attempt to identify them.

### *Pacific marine and anadromous fishes*

#### 1. *Salmon*

Continued high demand was forecast for supplies of sockeye, pink, chum, coho and chinook salmon for the commercial fishery, and of coho, chinook and some pink salmon for the sport fishery, also steelhead and cutthroat trout.

Substantially increased supplies of sockeye, pinks and chums were considered possible from the increase of currently depleted runs to the point of maximum productivity. This could be achieved only by strict and selective regulation of fishing, supplemented by improvement of spawning facilities and perhaps locally by artificial propagation. The Workshop found that coho and chinook salmon offered rather small opportunities for increase.

For the attainment of these objectives, the Workshop recommended that:

1. No additional uses of water on salmon rivers be initiated (e.g. for waste disposal or hydro-electric power), except such as are certain not to reduce salmon production;
2. Research be continued and intensified to learn the capacity of salmon to surmount obstruc-

There is fairly good co-operation between the United States and Canada with regard to conservation.

However, there is one possible adverse development in the future, namely the advent of fishermen of other nations into the fisheries just outside the three-mile limit. If this situation develops, joint arrangements may be possible on the basis of the principle of abstention.

tions and to tolerate polluting substances, and to design fishways and bypasses for upstream and downstream migrants, so that present obstacles to migration may be remedied and future ones avoided;

3. International regulation of Fraser River sockeye and pink salmon stocks be continued and that these and other stocks be built up to maximum production as rapidly as feasible;

4. The strongest efforts be made to continue existing regulations and agreements that prohibit high-seas net fishing for salmon in the eastern Pacific by Canada, the United States and Japan, and that other countries be discouraged from harvesting these already fully utilized fish;

5. Improvements to spawning and rearing areas be carried out wherever major benefits are possible.

#### 2. *Herring*

For the present level of utilization, the supply of herring was considered sufficient, and likely to remain so. Some expansion would be possible if the demand increased. The Workshop recommended that the study of herring should be continued, especially to determine the size of spawning stock needed for maximum average recruitment of each population, and to determine what environmental factors cause variation in year-class strength.

#### 3. *Halibut*

Demand for halibut was thought likely to increase gradually, and some increase in production would be possible. The Workshop recommended that international regulation by Canada and the United States be continued, and that efforts be continued to persuade other nations to abstain from entering this fishery, on the grounds that it is already being utilized to capacity.

The Workshop also felt it important that research be continued to define more closely the level of maximum sustained yield in this intensive fishery in each area of operations, and its possible fluctuations with environmental conditions.

#### 4. Other groundfishes

Gradual increase in demand was considered likely for soles, cod, lingcod, black cod, rockfishes, etc., and supplies of most species will permit expansion of production. The Workshop recommended that research be continued to define the level of fishing at which each species or group of species will come into maximum production.

#### 5. Oysters and clams

Gradual increase in demand for oysters was considered likely, and it was thought that intensive culture by present methods could bring about a four-fold increase in the yield. More intensive utilization of leased grounds should be encouraged, and research continued on improved or new cultural procedures. The Workshop also recommended continued study of the best utilization of clams; an increase in production of at least one kind was considered possible.

#### 6. Crabs and shrimps

Continued study was recommended to define the best level of utilization and to locate possible new stocks.

#### 7. Other fishes

The Workshop recommended that exploration and inventory be made of fishes that at present are not utilized or are little utilized, for example pilchards, albacore, pomfret and sauries. Other species, such as dogfish, are known to be available and it was thought that the catch might be greatly improved if marketability, processing methods and fishing efficiency could be improved.

#### 8. Marine mammals

The Workshop recommended that present international utilization of fur seal herds be continued. It considered that the stocks of whales could support a controlled fishery, and sea lions could be considered a minor resource. It was suggested that the re-establishment of sea otters on the British Columbia coast should be given serious study.

### *Atlantic marine and anadromous fishes*

#### 1. Groundfishes

The various groundfishes (cod, haddock, hake, redfish, halibut, smaller flatfishes, etc.) were considered of varied importance. Some populations are utilized by many nations and are potentially subject to overexploitation. Others are fished very little and there is room for great expansion. The collection of adequate statistics from all nations was thought to be most important. The Workshop recommended that the rate of growth, age structure, catch-per-unit effort,

etc., should be continuously studied to learn the level of maximum yield and to detect depletion, should this occur. The latter was considered to be particularly important for slow-growing species such as redfish, where decreases in yield from present levels must be anticipated.

#### 2. Pelagic fishes

Pelagic species, notably herring, swordfish, mackerel, tuna and sharks, as a group, were reported to offer large potential for expanded production, and the Workshop recommended that exploration and biological studies be continued toward that end.

#### 3. Lobsters

Conservation measures now in effect permit this species to sustain itself at a high level of yield. The Workshop recognized that the problem of infraction of regulations was serious in some areas, and recommended further educational effort as well as the strictest possible enforcement.

#### 4. Scallops

The scallop fishery is most active on Georges Bank, where three nations now capture them. Of these, Canada is taking an increasing share of the catch. The Workshop recommended that international research be continued to make best use of stocks and also that Canada make efforts to expand utilization of other stocks.

#### 5. Oysters

It was realized that increased supplies of oysters could come from more intensive utilization of leased beds and re-establishment of stocks depleted by disease. The Workshop recommended that study be continued of improved cultural methods.

#### 6. Clams

Less wasteful harvesting methods, improvement of grounds, and use of less accessible stocks should gradually increase landings of softshell clams. Certain populations are affected by pollution, and the Workshop recommended action to alleviate this unfavorable condition, as well as efforts to utilize other kinds of clams more fully.

#### 7. Salmon

It was recognized that the Atlantic salmon would continue to be in high demand for both sport and commercial use. The Workshop believed that undue pessimism about salmon was not warranted, and that adequate regulation with strict enforcement would permit it to maintain itself or even to increase in most areas. It was considered necessary, however, that damage from forest spraying should be overcome by the discovery of new insecticides or new

techniques, and the Workshop thought that increased attention should be given to this matter. Furthermore, it was considered that complete utilization of a river such as the St. John for hydroelectric power might prove inconsistent with having salmon.

To increase the productivity of salmon, the Workshop recommended the closest possible co-operation in regulation between federal and provincial governments and between the provinces themselves. In addition, increased planting of young fish was recommended as necessary on streams where spawning is inadequate.

#### 8. *Other species*

Species such as eels, smelt, capelin, alewives, shad, billfish, etc., are of minor commercial importance at present. The Workshop realized, however, that capelin and possibly billfish offered possibilities for large industries, and recommended appropriate studies.

#### 9. *Marine mammals*

The Workshop recommended that international management of harp seal herds be implemented as soon as possible.

#### *Freshwater Fisheries*

An increasing demand was seen for freshwater commercial and game fish over large areas of Canada. The potential production and value of this resource are not known and the prospects of meeting the demand have not been assured. It was felt that the fishery resources in remote areas should be investigated before being utilized.

In many of the established freshwater fisheries, not enough biological knowledge is at present available to maintain some stocks or to utilize others properly. The Workshop therefore recommended that the level of fishery investigations be increased. To ensure adequate support for this work, a clear demonstration of the value of the freshwater fisheries was considered essential. The Workshop urged that a survey be made of the social and economic importance of sport fisheries.

It was pointed out that the freshwater environment is particularly sensitive to man's activities, and the Workshop recognized the fact that the maintenance of fish stocks, particularly of the more desirable species, depended on the maintenance of suitable environmental conditions.



# *Fisheries Workshop B*

TUESDAY, October 24

## Attaining more efficient operations in the fishing industry.

Chairman:	P. A. LARKIN, Bureau of Animal Population, Botanic Garden, Oxford, England.
Co-Chairman:	LOUIS BERUBE, Professor, School of Fisheries, Laval University.
Lead-Off Speaker:	C. J. MORROW, President, National Sea Products Limited, Lunenburg, N.S.
Discussants:	HOMER STEVENS, Secretary-Treasurer, United Fishermen and Allied Worker's Union, Vancouver, B.C. E. M. GOSSE, Deputy Minister of Fisheries, Newfoundland Department of Fisheries.
Rapporteurs:	W. R. MARTIN, Biologist, Fisheries Research Board of Canada. J. B. RUTHERFORD, Assistant Director, Economics Service, Canada Department of Fisheries.

### Lead-off Speaker (Mr. MORROW)

Professor Crutchfield in his very excellent Background Paper put his finger on what I consider to be a most important point concerning the Canadian fishing industry. He said, in effect, that we have not been able to define the problem of the industry. It has never been defined to the point that a long-range program could be devised to gradually correct its ills and make it less dependent on government assistance. This desirable result of less dependence on government assistance would be, of course, more applicable to the east coast, since the west coast fishery has an enviable record of operating without government subsidies.

The fishing industry is fairly well organized to deal with its problems. Sixteen regional associations exist to deal with specific problems and the Fisheries Council of Canada, supported by these regional associations, operates at the national level. There are many other associations, such as the Fishermen's Federation in Newfoundland, the union which Mr. Stevens represents, the B.C. Vessel Owners Association, and so on.

However, while we have found these groups invaluable for dealing with specific problems, it is true that, individually or collectively, neither they, nor the government involved, have been able to clearly set out the problems of the fishing industry in terms

which would lead to a logical program for more efficient operations in the future.

We will make progress in many directions. But the detailed, basic pattern for sound development has not yet been conceived.

Perhaps I have said sufficient to emphasize the great complexity of the industry which makes a simple answer to its problems most difficult, if not impossible.

Perhaps, also, the progress toward a solution to its problems is being hampered by the fact, as Professor Crutchfield points out, that the fisheries are, as time goes on, playing a reduced role, relatively, in Canadian economic development. Industry has been discouraged somewhat by the trend in government at the policy level, of endeavoring to lump fisheries troubles in with those of related industries. The corrective measures invariably fall far short of being sound and effective when applied to the fishing industry.

The suggestion by Mr. Crutchfield that buying methods in the industry are a cause for real concern in parts of Canada might be interpreted to mean that this is a serious problem. He visualizes a situation where lack of access to a fairly large number of alternative buyers may result in lower prices than the markets would properly justify. A healthy fishing industry depends on a healthy condition at both the

producer and processor level. In addition, the profit record of this industry is surely sufficient evidence that buyers are not profiteering.

In "Taxation Statistics—1959" (Department of National Revenue Study), it is recorded that the processed fish industry had one of the lowest levels of profit on sales—1.9 per cent—of all the industries surveyed. More significant, the sample, from the 1957 corporation tax returns, revealed that all returns of corporations reporting total assets of \$500,000 or more, or a current year profit of \$25,000 or more, were included. The sample included 47 fish-processing companies with a profit (average 1.9 per cent on sales) and 66 companies with a loss. Total profit was \$2,600,000 and the total loss \$2,100,000. We tend to hear, usually, about one or two large companies with a profit. Here were 113 companies with a total net profit of \$500,000 for a full year of operation—less than \$5,000 per company.

One of the serious problems affecting the role of this industry in the Canadian economy, therefore, is the fact that it is a low-margin, low-profit industry, and it is most difficult to attract private capital into it. Our tax laws do not take into consideration steadily increasing costs and do not permit sufficient write-offs during the life of assets to replace them when they are obsolete or worn out. This fact, combined with low profits, is partly responsible for the slow progress the industry has made.

It should not be inferred that it is impossible in, say, the Atlantic Coast fisheries, to pay the fisherman more for his fish. I think it would be possible if we corrected some of the faults in our marketing of the product, and particularly on groundfish, of which some 80 per cent goes into export trade. Less competition between sellers on export markets—with less price cutting—would result in larger returns to all concerned.

A discussion on more efficient operation of the fishing industry must of necessity consider the supply and demand situation. Dr. W. E. Ricker and Mr. W. C. MacKenzie have prepared detailed Background Papers on these two factors. Mr. MacKenzie, of necessity, has paid attention to both supply and demand in preparing his paper on the demand outlook.

I would prefer to keep my observations on stocks to the minimum necessary to discuss the future demand situation. On the supply side, looking to the future, I would be prepared to go along with the summary as presented by Dr. Ricker in the table on page 777 of Volume 2 of the Background Papers.

This indicates possibilities for increased catches of cod, flounders, mackerel, herring, scallops and oysters on the east coast; sockeye, pink and chum salmon, herring, soles, oysters and, to a lesser degree, halibut and crabs on the west coast; with some increase in the production of whitefish in inland waters.

However, it is doubtful if anyone can predict the future intensity of fishing by vessels of foreign countries in the waters off both our east and west coasts. We have seen the tremendous increase in the tonnage operated by European countries in the last five or six years off the east coast. There are indications that both the Russians and Japanese plan to exploit the North Pacific to a greater extent in the coming years.

My feeling is that we can, however, continue to exploit the fisheries to a degree sufficient to meet any foreseeable increased demand in the Canadian and U.S. markets, aside from certain species such as lobsters, oysters, and most of the freshwater species, where increased production is not anticipated.

Mr. MacKenzie points out that we utilize about 30 per cent of our production in the home markets and export the balance. Half our total income, from the home export markets together, comes from exports to the U.S. market.

Our increased consumption in the Canadian and U.S. markets in the last 10 years has come through the increase in population. The per capita consumption rate has remained relatively steady at 13.5 lb. in Canada and 10.5 lb. in the United States.

The statement is made that it seems unlikely that real per capita rates of fish consumption will increase substantially. I do not think we should agree unconditionally with this statement. We should accept it as a challenge to do something about it. We know it is not easy to change people's eating habits. We also know that thousands of people from inland points in the United States beat a path to good fish restaurants when they visit seaport cities. They are lovers of fish. The big question is how do we convince more people that fish is a good appetizing food, that should play an important part in a balanced diet. Once we solve this problem our per capita consumption figures will increase.

In this field of promotion the industry has a direct responsibility. Aside from the salmon canners, I do not feel that the Canadian fishing industry has faced up to its responsibilities in this field. We have done something—yes—but not nearly enough.

The summary statement prepared for Workshop B provides ample material for discussion at this Conference. I will not review this in its entirety but suggest among other things we should particularly examine the following:

1. Why should North American consumers generally regard fish as a somewhat inferior protein food? What can be done about this?

2. British Columbia Fisheries—It is stated on page 8 of the summary that the prime concern for the future must be to expand modestly the out-

put of British Columbia's high valued catch with fewer men and fewer and progressively more effective fishing units. Is this a practical idea—if so, how can it be accomplished?

3. There is surely an inefficient use of manpower on the east coast. Some of the species on the east coast are caught seasonally, such as lobsters, and nothing can be done about that. The greatest opportunity for expansion is in groundfish. There will always be large quantities of groundfish taken seasonally (Newfoundland cod trap fishery is an example). Small draggers and longliners have increased in numbers in recent years and there is a ready market for their fish; the expansion, however, must come from off-shore fishing with large-trawlers. Processing plants operating on a year-round basis are likely to be more efficient and have a lower unit cost of processing than seasonally operated plants.

4. Reference has been made in the background papers to the need for education. There is great need for schools on the east coast devoted exclusively to the education of fishermen. If we are to keep pace at all with our European competitors we must have better trained men on our vessels. A training program should be carefully drawn up to meet the particular needs of the trainees. It should be a program which recognizes that initially, at least, many of the candidates will have had limited schooling and will be reluctant to attend a regular school or training center with other students their junior in years and their senior in terms of academic education. For this reason schools for fishermen should not be affiliated with universities or other schools, but like some of our agricultural colleges should be separate units and preferably located in towns rather than in cities.

5. There is also need for education of processors and others in the industry, as well as the consuming public. On the east coast, in my opinion, the greatest weakness in the industry is disorderly marketing. Prices to the fishermen and profits in the industry generally could be increased by more orderly marketing. I do not expect to have many agree with me, but I firmly believe that a greater concentration of processing and marketing in the hands of a few large companies would bring this about.

The summary statement expresses concern about the unusually high degree of integration and concentration among fish processors and marketers, and states that in the long run it seems likely that some application of anti-monopoly legislation appropriate to the peculiar structure of the fisheries will have to be worked out. My opinion is quite the opposite to this.

6. It seems to be quite a general opinion that the prospects are poor for any long-term growth in the freshwater fisheries except in some of the lower priced fish, such as smelts. There is also some hope of reviving the lake trout and whitefish populations, provided the problem of the sea lamprey can be overcome. The summary statement suggests the need to improve the organization of the entire production-marketing flow.

7. The summary statement states fish technology must occupy a prominent part in fisheries research to produce a desirable product through the best and most economical methods of handling and manufacturing. I think this Workshop should examine carefully the suggested lines for study.

#### Discussant (Mr. STEVENS)

The prime task before this Conference may be defined in terms of selecting the most efficient method of utilizing our natural resources for the future welfare of our people, bearing in mind the necessity of conservation and the desirability of rising living standards. If we intend to carry out this responsibility we cannot be satisfied with analyses or proposals which are predicated only upon the *status quo* in production methods, resource ownership, controls—or lack of controls, or existing relationships between government, industry and labor.

Canadians have long understood the need for public ownership of postal services, water supply systems, hydroelectric power generation, etc. The controversy between private and public ownership is not yet resolved but there is much greater knowledge today of the advantages of long-term public planning and of the need for governmental control in the use of our natural resources. Undoubtedly this awareness will increase in the next two decades, resulting in a greater degree of public ownership, management and planning in the utilization of those natural resources which are, at present, primarily controlled by private industry.

It would be difficult to find more irrational uses of capital and labor than exist today in the fishing industry. Perhaps the competitive advertisement of the various brands of soap flakes outstrips the fishing industry in wastage of human energy, but at least the various spieters are on different wave-lengths at different times.

In 1960, 15,159 individuals participated in catching and transporting fish to the processing plants in British Columbia. Capital investment in all types of vessels, gear and equipment totalled \$58,146,000. Landed value of the catch was \$27,962,000. We used \$2 in capital equipment for every \$1 of production. As has been stated by Mr. Crutchfield it "*costs much more—in real as well as monetary terms—to catch*



*about the same quantity of fish*"—than it did 20 or 30 years ago.

Consider the sheer economic waste of 10,000 men frantically competing one or two days per week, as regulated by the government, for a limited volume of salmon and then sitting idle for the balance of what used to be a normal five-day operation. One hundred seiners worth upwards of \$100,000 apiece, each employing eight men, are today catching about the same tonnage of herring as was taken 20 years ago by 40-45 vessels. Potential efficiency has risen but in reality our fishing industry in British Columbia has become more inefficient.

Eighteen years ago the organized fishermen of B.C. advanced the idea of license limitation, or restricted entry, as an extremely necessary additional method of regulation. We can now say our representations have at least helped to bring about an examination of the problem. It remains to be seen whether appropriate action will follow. This Conference should emphasize the urgency of immediate government action to control the numbers of commercial fishermen in the major existing fishing operations in B.C.

Considerable concern has been expressed in Background Papers over the possible cost of stream clearance, spawning ground improvements, artificial hatcheries, water storage, reforestation around stream beds, and fish ladders at dams or points of difficult passage. It has been said that "more salmon can be obtained, but only at very rapid increases in costs."

One could well argue that increased costs are of no importance. For example the Canadian government has poured billions of dollars into obsolete equipment designed for destruction. Man-hours of unemployed labor during the past 10 years runs into billions. Present policy seems to indicate willingness to pay out hundreds of millions of dollars per year in unemployment insurance and social welfare, rather than embark upon economy-building projects with benefits in terms of human self-respect resulting from satisfaction gained in useful employment.

Even if we limit our financial capacity to the fishing industry we might well consider using one-fifth of the capital and manpower, now excessively used in harvesting, in the improvement of our great salmon fisheries. Surely \$11.6 million in capital equipment and 3,000 men could achieve substantial gains. Primary production would not be retarded one iota. The end result would be more production and greater efficiency.

Research into the life cycles of ocean fishes proceeds at a snail's pace compared with man's achievements in the age of space travel, electronics and nuclear physics. The age-old complaints of insufficient funds, shortage of equipment and of trained person-

nel are still major obstacles to rapid progress. In B.C. we have commercial fishermen with high school and university training engaged in one of the most insane, stultifying races for survival ever devised by man. Proper planning, combined with adequate provision of funds, could harness this potential into research activity which would be as decisive a step forward as was the steam locomotive to the ox-cart.

Justifiably, concern has been expressed over possible dislocation of individuals and disruption of communities if restrictive licensing were too rapidly applied. Government policy falls far short of maintaining full employment. To deal with government inadequacies on this point would require another paper. Possibly another government or governments.

The fishing industry of B.C. is highly seasonal and will tend to remain so as long as our reliance on the salmon, halibut, herring and smaller fisheries in our territorial waters continues. It is extremely disappointing to find that none of our Background Papers seriously analyzed the problem or proposed any solution.

Canadians have always been seafarers in large numbers proportionate to our population. We have ample harbors and ready access to the oceans of the world. Why then should our fishermen not participate in the rapidly expanding ocean fisheries? We must answer this question constructively or we will soon be rated as a non-existent factor in world fisheries.

Using 30 per cent, or \$17,500,000, of the existing capital investment in B.C. and 4,500 of our fishermen and transport workers we could construct, operate and maintain a fishing fleet capable of catching tuna in all waters of the Pacific. We could enter the rich bottom fisheries in the Bering Sea. Such a fleet could be the nucleus of an expanding industry which would not only provide employment, but also would help to alleviate the hardship caused by seasonality and unavoidable fluctuations in our existing fishery. Direct government aid and action is required to transform such ideas from desire to reality.

Canadian fishermen have expressed deep concern over the invasion of our coastal waters by foreign fishing fleets. We have advocated immediate action by our government to extend our territorial waters to 12 miles outside of a headland-to-headland baseline. Our respect for the courage and tenacity of the Icelandic government is exceeded only by our disappointment in the faltering attitude of our own government. This Conference should strongly urge an early proclamation by our government of a 12-mile limit.

Another major aspect of international fishery problems is the continued recognition by our government of a mid-ocean, mothership-based operation for salmon by Japanese net fishermen. The

existence of a tripartite treaty between Canada, the U.S.A. and Japan, which excludes the Soviet Union, and of a bilateral treaty between Japan and the Soviet Union, does not provide a logical solution to conservation problems in salmon, king crab, halibut, groundfish or other species in the North Pacific. A new four-nation treaty is of urgent necessity. Our government should be urged to lead off in top level diplomatic circles for negotiation of such an agreement. One of our strongest demands should be complete cessation of all net fishing for salmon on the high seas. Canada, Japan, the United States and the U.S.S.R. should mutually recognize the scientific necessity of confining salmon net fishing to their respective territorial waters.

Marketing of present production and of projected productive increases is always raised as a serious or even as an insurmountable obstacle. Regrettably the Background Papers constitute little more than routine reference to traditional problems. Wheat would still be piled on the ground had we confined our sales to traditional markets.

Every day we hear appeals on the radio directed toward alleviation of the hunger suffered by 50 per cent of the world's population. We are told that one billion children go to bed hungry every night. Surely, if we cast aside stereotyped marketing concepts and apply some imagination to the potential outlets for tasty, well-packaged, nourishing fish we need not crawl into a hard shell restricting our productive capacity to our "normal" markets in North America and Europe. We should look ahead 20 years and visualize the prospects which will be open. They will not be there if we sit back and complacently conform to marketing traditions of the past decade.

In conclusion it may be well to note that private industry has failed to solve these problems. It can also be said that governments whose ears are tuned to the music of private capital often find it difficult to hear the voices of the fishermen, even when desperation increases the volume.

Questions have been raised regarding the ownership and control of these valuable resources. Co-operative development and public ownership and control may well be the only logical means of making the fullest, most efficient use of our great potential in the Canadian fishing industry. This Conference should carefully examine this aspect of the problem of improving our living standards for tomorrow by efficient and sensible use of our manpower and our great natural resources.

#### Discussant (Mr. GOSSE)

I have read carefully the various papers submitted to this Conference dealing with the problems of our fisheries. Many of the views presented in these

papers are not unfamiliar to me, as I believe most of the material has been presented in some form or another at the federal-provincial Atlantic Fisheries Committee meetings during the past few years.

I am pleased to note from the article by Dr. W. E. Ricker that the productive capacity of groundfish off Canada's east coast will increase considerably during the next 20 years. However, I believe that the tremendous foreign fishing fleet now operating in the waters off the coast of Newfoundland eventually will have an adverse effect on production.

Apparently the once prolific fisheries off the coasts of Northern Europe have been so depleted that European countries have in recent years been forced to build larger ships and more elaborate equipment to fish on the Grand Banks and the coast of Labrador. If European fish resources could become depleted, surely it is inevitable, if the intensity of prosecution is great enough, that the grounds on this side of the Atlantic will eventually become overfished. Nevertheless, as prospects are good for the next 20 years, I sincerely hope that my long-range gloomy outlook is not justified.

With regard to conservation, I believe the federal Department of Fisheries has done excellent work in this direction, particularly with species over which they have some control, namely lobster and to some extent Atlantic salmon. Their efforts with regard to deep sea fisheries under existing international legislation can have little effect because there is no Canadian jurisdiction. I believe the situation could be remedied somewhat by Canada's having a 12-mile fishing limit for foreign vessels. Attempts have already been made to obtain such a right, but without success, and I now feel that it is time for Canada to make separate agreements with participating countries in this matter as I believe the 12-mile limit, although not solving our difficulties, would nevertheless provide some measure of protection for our inshore fishermen. This would be particularly true if the demarcation line were drawn from headland to headland around our coastline.

I also wish to point out at this stage that the divisor system for assessing unemployment insurance is more favorable to those fishermen who salt their fish than for those who sell in the fresh state. Let us hope that the federal government will take steps to rectify this unsatisfactory method of calculation. By so doing the salt-fish producers would be encouraged to set up their own plants at convenient localities where they could improve quality by purchasing fresh fish and control this process to meet their market requirements. This would increase competition between operators of salt-fish drying plants and those processing fresh-frozen filets. Such a development would probably be beneficial to the fishermen who could spend more time fishing.



Dr. A. F. Laidlaw advocates an Atlantic School of Fisheries in his paper. I might say there is nothing new in this idea as the question was brought before the federal-provincial Atlantic Fisheries Committee some years ago and the proposal is exactly along the same lines. After some consideration the original idea was rejected on the grounds that education of any type was a provincial prerogative.

I strongly believe that this objection can be overcome, and an institute for the training of fishermen, plant technicians, etc., would be of tremendous benefit to the industry. I am convinced that such a course should be adopted by obtaining the co-operation of all provinces interested in the fisheries and in collaboration with the federal government.

In the field of purely scientific research I believe the federal Department of Fisheries is making great progress, bearing in mind the difficulties under which their scientists work. This is a relatively new scientific field and those engaged are to be highly commended on the progress made to date. I do think, however, that their discoveries and scientific data should receive more publicity by means of publications comprehensible to the average individual and particularly to fishermen.

The comparatively new Industrial Development Service of the federal Department of Fisheries is attempting to apply scientific and technological know-how to the fisheries on a commercial basis in collaboration with all fish-producing provinces. Already there have been substantial benefits from this program and the industry would be well advised to take advantage of this service.

While I have no strongly divergent views on most of the papers submitted, I cannot agree with some aspects of the article entitled "The Role of the Fisheries in the Canadian Economy" written by Professor J. A. Crutchfield.

As a Newfoundlander I would like to point out that upwards of 100,000 people in my province are dependent on the fisheries as the mainstay of their livelihood. With the exception of some woods operations and a few kitchen gardens there is no other means whereby they can make a living. Although fishing is an arduous occupation, yet the majority of Newfoundland's fishermen, numbering well over 18,000, prefer to live in their scattered settlements where they are no longer isolated because of the extensive network of access roads built throughout the province during recent years. Attempts have been made from time to time to concentrate our population, but while there has been a small reduction in the total number of outports, the movement has been confined to people leaving offshore islands and resettling near roads on the mainland. No great change can be expected in the pattern of outport

settlements until there is a tremendous industrial development within the province. Meanwhile, the people continue to fish, obtain meager returns for their catches, and in times of low annual production find it difficult to stay off the dole.

One simple solution would be an increase in the price of fishery products based on a minimum of four cents a pound for fresh gutted codfish. Unfortunately, there is no prospect for such an increase at the present time, although fishermen today are selling at the rate of three cents a pound, probably because supplies are scarce and competition is keen.

I would sincerely like the economists in Canada who are grappling with the problem to try to devise some means of solving this question. Increased production is not enough; it involves tremendous outlays of capital which are not justified at existing market prices. I do not see any hard-headed businessmen, not already fully involved in the fisheries, risking large sums in so precarious an industry. It would only be necessary for him to read Dr. Crutchfield's article and contemplate the formidable competition offered by the heavily subsidized foreign fishing fleets to deter him from such a venture.

The economists have said that subsidies are not the answer to the ills of the east coast fisheries. This may be, but what are Newfoundland and other Atlantic fishermen to do in order to maintain their independence? Are they to be left to vegetate and lose their manhood by existing on the dole and social welfare?

Economists are great believers in advertising; so are toothpaste manufacturers, and they do it on the grand scale. The east coast fishing industry cannot afford such measures; therefore it has already been suggested that the federal and provincial governments, in conjunction with the industry, put on a very modest advertising program of, say \$2 million per year for a five-year period. This suggestion was brushed aside because the federal government felt that other ailing industries, such as farming, would also demand a similar program.

I sincerely believe that well-planned advertising, stressing the low fatty content of groundfish in the prevention of heart disease, could have a most beneficial effect on increasing sales in North America.

Realizing the vital necessity of a prosperous fishery to the economy of the province, the government of Newfoundland has made expenditures for general fishery purposes and by way of loans of approximately \$25 million to improve and modernize the industry. The results have been spectacular in so far as the per capita catch of the fishermen is concerned. The average fisherman today is catching more than two-and-one-half times the amount caught by his father between 1910 and 1920. This is mainly due



to the fact that modern processing plants have permitted him to devote more time to the catching rather than the curing of fish. It is conservatively estimated that if all Newfoundland fishermen had taken advantage of all government help the per capita annual catch would have increased fivefold. We have difficulty in selling existing production at low prices; so where would we sell such an enormous quantity at any price?

Another point I wish to make is that I entirely disagree with the view that monopolies exist in certain areas of the fishing industry in so far as Newfoundland is concerned. Cutthroat competition is not desirable under any conditions and perhaps some form of orderly marketing, at least for salt fish as it exists for wheat, should be introduced. This would avoid severe fluctuations in prices to fishermen in time of glut or scarcity. If we ever enter into

a common market plan with Europe or the United States it would be highly advantageous to our fisheries but a rude shock to those (industries) pampered by government protection.

Finally I am of the opinion that the ills of our fishing industry have been fully diagnosed, but no one has suggested effective cures. However, it causes too much distress in an otherwise healthy economy to be ignored in the future. Canada has given tremendous aid to foreign countries, and I am particularly thinking of the Colombo Plan, and therefore must make an all-out effort to secure a reasonable standard of living for all Canadians. The east coast fisheries are a weak economic link in the chain of our prosperity, and I believe that this is an opportune moment for the Conference to find some constructive means to strengthen it.

## DISCUSSION

### *Nature of problem*

In a general discussion of the nature of the problem of attaining more efficient operations, certain inefficiencies in fishing and processing operations were recognized.

In *fishing operations*, inefficiency results from three major causes. These are ineffective use of labor and capital, the seasonal nature of most fishing operations, and the inadequate fishing methods in many areas.

In most commercial fisheries Canada has too many fishermen and too much capital devoted to present levels of fish production. This results from the common-property nature of the resource and the unrestricted right of entry of Canadian fishermen in most fisheries.

Seasonal inefficiencies in fishing operations result from such causes as fluctuations in fish abundance, changes in weather and ice conditions for fishing, effects of fisheries regulations which are designed to conserve the fisheries, and the limited diversity in the number of species and areas fished.

Fishing methods can be improved in many regions. For a variety of reasons, including regulations, the most efficient gear is not always being used. Fishing craft have increased in size, but relatively few are large enough or sufficiently well equipped for year-round, mobile, flexible, centralized operations. More efficient organization would also be desirable in fleet operations, collection and transportation of fish to processing plants in some fisheries.

In *processing operations* we find modern mechanized fish plants in all areas, but we still note room for improvement related to the primary fishing and the tertiary marketing levels of fish production.

Fish production fluctuates widely and in an unpredictable manner from year to year. These annual changes together with the difficult seasonal nature of fishing operations noted above constitute most serious problems for the processing industry.

Marketing includes a number of problems. Increased demand has been limited by numbers of consumers in existing markets. Per capita fish consumption does not appear to be increasing with improvements in variety and quality of fisheries products. Promotion of fish sales has been on a small scale compared with many other food products. There is certainly room for improvement in marketing procedures which will stabilize fish prices.

The Workshop recognized the problems resulting from *international competition* in fisheries. Competition for exploitation of resources in international waters leads to changes in the abundance and sizes of fish available to Canadian fishermen. This is resulting in reduced economic returns for effort expended in fishing.

International competition is also important in the marketing of fish, particularly in export markets. Foreign competitors of Canadian industry are catching fish with efficient methods and are often subsidized by their governments. In order to continue high exports of fish it is necessary to sell fish of high quality at competitive prices. This makes increased efficiency of all operations essential.

The Workshop noted the lack of clear understanding concerning the *Canadian policy for fisheries*. Many programs in the Fisheries, Transport, Labour and Public Works Departments of the federal government, and in the provincial governments,

are encouraging more efficient fishing and processing operations. These include research, development, education, inspection, consumer, insurance, harbor development, subsidy, loan and trade programs. It was noted that increased integration of these programs into a national policy is desirable.

#### *Recommendations*

##### *1. Government regulations*

A major problem in the fisheries arises from the free or nominal cost of rights to exploit a common-property resource. This problem is most sharply pointed up in those fisheries where there is relative scarcity of supply with the consequences of entry of too many fishermen, together with excess investment of capital.

Further problems develop from the impact of other regulations on the fishing industry in matters such as taxation.

The Workshop recommended that government policies for the fishing industry be designed to bring about greater efficiency in the use of manpower and capital. In other words, policies should be devised to encourage the taking of the optimum sustained catch, as this is related to satisfactory economic returns throughout the industry.

It was recommended also that the structure of taxation and related matters be so adjusted as to provide greater incentives in all phases of the fisheries industry.

To facilitate formulation of programs and policies related to the foregoing recommendations, the Workshop agreed that intensification of economic and technical research for the fisheries was essential.

##### *2. Development of the fisheries*

The meeting took note of the increasing competition to Canada from a number of countries in taking certain fish stocks. Without suggesting a large-scale expansion into the sea fisheries, it was nevertheless the opinion of the Workshop that Canada might find opportunities for increased catches if more direct assistance in exploratory and experimental fishing were undertaken.

The Workshop recommended that exploratory fishing expeditions be undertaken for the purpose of finding stocks and also discovering the best means of taking these. However, this proposal was to be contingent upon provision of the facilities required to take advantage of the discoveries.

##### *3. Education*

It was agreed that there was need in the fisheries for improvement in the skills of all those connected with fisheries occupations. It was noted that policies for education and extension work for fisheries might vary regionally and that requirements would dictate

the kinds of programs adopted. Nevertheless it was the consensus that training for the fisheries in particular disciplines and techniques should be a co-ordinated effort within regions. Training programs, it was noted, need to be related to programs of government assistance and to technological change within the industry.

In addition, attention was called to the desirability of high standards for recruitment of personnel in both government and industry employment and the need to provide for this through educational and training facilities.

In this connection, it was noted also that fisheries lag behind our other natural resources in the field of education. Although fisheries research is well organized, there is a serious lack of educational facilities, particularly at college level.

This Workshop accordingly recommended a well co-ordinated scheme of fisheries education at all levels (college, technical and adult) and by all media, in order to ensure the application of knowledge and techniques to the fishing industry.

##### *4. Processing operations*

As in most industries, instances of inefficient operations can be found in fish processing. It was agreed that having regard to the conditions under which the industry operates, its efficiency is relatively high. The chief limitations to improved efficiency arise from seasonal and year-to-year variations in supplies of the raw material.

The Workshop recommended that further increases in efficiency in processing operations be facilitated. As appropriate, increases in efficiency may be achieved by greater centralization, and by greater flexibility in fleets supplying the plants so as to reduce seasonal and year-to-year variations in supply. Industry and government research programs should continue to work to improve and develop products of the fisheries.

##### *5. Marketing*

The Workshop considered the marketing problems at two levels—the supply and purchase of fish from fishermen and the sale of the products from processing establishments. Discussion of the sale at “port markets” brought under consideration types and forms of marketing boards but with no firm conclusions as to the organizations desired.

Importance was attached to the need for improvement in marketing the products. In this connection there were a number of references to “orderly” marketing.

Those problems relating to the marketing of Canadian fishery products abroad were recognized as

intricate and complicated. It was observed that the government was undertaking a number of special trade missions in an endeavor to expand existing markets and to find new markets for fisheries products.

As well, there was recognition of the efforts of international agencies to alleviate hunger and meet nutritional needs.

The development of the domestic market could provide opportunities for the Canadian industry. Much more needs to be known about food habits of Canadians, however, before any large-scale market development program can be planned. This program should be developed largely by industry after research and investigations by government in consultation with industry.

The Workshop supported and requested continuation of the export market expansion program; it recommended that detailed surveys be undertaken of the domestic market for fisheries products.

#### 6. Readjustment

The Workshop considered the sociological implications of attaining more efficient operations in the fishing industry. It was recognized that readjustment solutions are not the responsibility of fisheries, but rather over-all, regional problems. Short-term subsidies, vocational training, and transplantation allowances were noted as methods of meeting the rehabilitation needs.

It was recommended that rehabilitation should be

recognized to be important in fisheries as well as in other primary industries, and that consideration should be given to appropriate government action associated with that provided for agriculture by the Agricultural Rehabilitation and Development Act (ARDA).

#### 7. Territorial waters

The Workshop agreed that questions of territorial waters play a significant role in determining the success and efficiency of Canadian fishing operations. It was recognized, however, that many considerations other than fisheries were involved, including international relations of a complex nature. The meeting recognized a distinction between the problem of territorial waters and that of Canadian exclusive fishing zones. The Workshop commended the policies which the Canadian government has been pursuing in this regard.

#### 8. Further "Resources for Tomorrow" Conferences

Recognizing the value of the discussions which have been held, the Workshop commended those responsible for the Conference and recommended that consideration be given to the organizing of further conferences of this kind. It was recommended that although the contributions of academic and civil service representatives were valuable and appreciated, a greater degree of participation by people engaged in commercial fishing operations would be desirable.

## JOINT MEETING

### FISHERIES WORKSHOPS A AND B

Friday, October 27

Following separate consideration of revisions to earlier recommendations, Workshops A and B met and jointly considered points of common interest.

The joint Fisheries Workshop noted with great interest the concern expressed in Water Workshop C on the subject of water pollution and suggested that regardless of the eventual functions of a National Resources Council, the intent of the programs of pollution control that are suggested should be carried out.

The joint Workshop discussed the various proposals put forward at the Conference with regard to the administrative structure and functions of a National Resources Council and/or an agency that would continue or enlarge the functions of the present Conference. Recognizing the number of considerations

involved, the group limited its discussion to expression of the concern that fisheries interests should be adequately considered in any proposals of the type under review.

The Workshop recognized the fact that commercial fishermen and anglers had a common interest in the exploration, development and protection of fish stocks.

The joint consideration of the questions of maintaining adequate stocks and attaining more efficient operations underlined the need for co-ordination of programs for fisheries between governments, within government agencies and between governments and industry. The success of efforts to improve fisheries largely hinges on adequate liaison, and the integration of individual programs into a national policy.





# FORESTRY

Tuesday, October 24 and

Friday, October 27, 1961

"To determine a sound and proper (forestry) policy, it is necessary to know what the values are, measure the importance of each and then, by a series of comparisons and a process of selection, arrive at the highest priority value or combination of values. Not only economic considerations are involved but social, aesthetic and spiritual ones as well. The time is ripe for a searching look at our accumulation of forest legislation and forest practice to determine wherein it falls short of constituting a *forest* policy compatible with our present and future needs."

W. A. E. Pepler, "Review and Assessment of Present Forest Policies," *Resources for Tomorrow*, Vol. 2, p. 736.





# Forestry Workshop A

TUESDAY, October 24

Improving the environment (administrative, jurisdictional and economic) within which substantial increase in output of forest products may be obtained within competitive cost limits.

- Chairman: J. RISI, Professor, Faculty of Land Surveying and Forestry, Laval University.
- Co-Chairman: E. PORTER, General Manager, Quebec Forest Industries Association Limited.
- Lead-Off Speaker: M. KALMAKOFF, General Manager, Saskatchewan Timber Board.
- Discussants: J. A. BRODIE, Chief, Timber Branch, Ontario Department of Lands and Forests.  
IAN MAHOOD, Assistant to the President, Council of Forest Industries of British Columbia.
- Rapporteurs: GEO. MAHEUX, Professor, Faculty of Land Surveying and Forestry, Laval University.  
K. B. BROWN, Deputy Minister, New Brunswick Department of Lands and Mines.

## Chairman (Mr. Risi) \*

We have the privilege to base our discussion today on a great series of excellent and thought-promoting Background Papers written by Messrs. Wilson, Love, Tunstell, Sisam, Johnson and Holt, Moore, Harrison and MacLean, Smith and Forgie, and Pepler.

A great number of fundamental questions arise from these papers. Our task today is to find an acceptable answer to some of these problems or, at least, to formulate some reasonable suggestions for their practical solution.

Most of the authors of the forestry Background Papers agree that our high-cost economy is the most serious handicap in the present and future development of our wood-using industries. Everyone knows that production costs depend upon many factors such as administration, forest management, production of raw materials, labor relations, mechanical or chemical conversion according to conventional or newer methods, transportation, taxes of all kinds

and other fixed charges, legislation and forest policies, export and import regulations, and even international politics. All these technical, social, political and economic factors are so closely interrelated that a more or less detailed analysis of their individual contribution to the over-all picture is a difficult, if not an impossible task.

Even if it seems hard to separate a given group of factors from others, for example management from economy (because management is always planned as a function of economy), the particular duty of this Workshop is to study the effect of specific factors such as administration, jurisdiction and economy upon the environment. But even with this limitation in mind, the individual contributions of these factors are closely interlocked and any attempt toward an analytical study requires the help of experts in each of these fields.

## Lead-Off Speaker (Mr. KALMAKOFF)

In the paper entitled "The Development of the Forest Industries," Smith and Forgie describe the lumber producing industry of Canada and explain

\* Translated from French.

that a large part of this industry consists of a large number of very small enterprises.

It is well known that many of the small lumbering operations are quite inefficient. Being small they are not in a position to hire people of experience and ability to run the operation. Often they use equipment that is not best suited for the operation for which it is used. The equipment may be set up with inadequate care. They waste more wood than is necessary or justifiable. If they do their own planning, they often use small inefficient equipment which usually does not do a satisfactory job. If they do their own marketing they are unable to keep in close touch with the market so as to find the best use for their products.

The large number of small establishments of low efficiency is one of the main problems of the lumbering industry in Canada and in this area lies considerable scope for improving our institutional framework.

The Saskatchewan forest industry is quite small and has been carried on mostly by small operations for a considerable time. Because of the many small widely separated stands of timber most of the operations must remain small.

During the past sixteen years a unique organization has been developed for co-ordinating, improving the efficiency, and marketing the production of all the small producing operations of the province. This is the Saskatchewan Timber Board.

The Timber Board started out in 1945 as a marketing agency. Small sawmilling contractors produced the lumber, either they or other small contractors planed it and the Timber Board did the marketing.

It is a well known fact that one of the greatest weaknesses of the small operation is in the marketing of the product. It is hardly possible for a small operator to keep in close touch with the various markets available. If he does make a good market connection, he is unable to maintain it for very long as he soon runs out of supply. He is, of course, at a great disadvantage in dealing with the wholesaler whose business it is to know the market, who makes a full time job of dealing in lumber. In this relationship, the producer's position is usually weak. The marketing function was, therefore, the first to be reserved for the Timber Board.

Early in its history, the Board found that lumber finished by many producer-owned planing mills, under contract, varies greatly in quality of manufacture, in accuracy of grading, in promptness of delivery and in reliability of service. Lumber planed and handled in this way does not yield the highest value, by far. The Board, therefore, began to acquire piling yards and planing mills by constructing its own and by purchasing others suitably located. This

was done according to a plan so that the permanent yards and planing mills could be located most conveniently to the long-term timber supply.

In this way it was possible to standardize quality of manufacture and of grading. Proper maintenance of planing equipment, accurate loading and checking. Fine trimming, stamping and waxing equipment was installed at the main mills and the buyer of Saskatchewan lumber could now expect the same quality of manufacture, grading and service regardless of which part of the province the lumber came from or from which sawmill or planer. The supply is large enough to provide market contacts continuously. The same quantity of lumber handled this way is a much more attractive source for the buyer than the same number of establishments operating independently.

Under this arrangement it became feasible to grade the lumber much more thoroughly and to make more effective use of the better grades. Selects and clears could now be picked out and accumulated because there were now sufficient of them to fill orders for these high grades.

The production of seventy or eighty sawmills, handled and planed at eight yards, became more like the production of a single large operator. This is one way to make the lumber from many small mills more competitive in the market. You not only have a more desirable product that commands a better price in the market, but you can produce it in volume and process and sell it at lower cost even from many scattered timber stands.

In addition to lumber, the Board produces pulpwood, mostly for export to the United States; power poles and telephone poles for use by the province's utilities; ties for the railways; timber and pilings for bridges; and fenceposts. Treating contracts are maintained with several wood preserving establishments for treating poles, bridge timber and fenceposts.

What the Board has tried to do is to perform these functions in which it can bring some advantage to the public interest. Where it is felt that a function can be best or equally well carried out by private industry, as a contractor, there private enterprise is used.

One of the great advantages of this setup is the stability which it brings to forest operations. Stability in producing operations in the woods, in handling and processing lumber in the yards and in employment in all forest activities.

Consider the factors that an agency of the government must take into account in making its plans.

Let us suppose that we are making up our operating plans for the season but the market has taken a decline and we can no longer sell lumber at a profit. If we were a private enterprise, we might well decide to shut down and await an improvement in the

market. Or we might decide to produce only some few items which we feel sure we can sell at a profit. The result, in either case, is unemployment, loss of purchasing power and a lowering of the level of economic activity in the area.

But what is the reaction of the public enterprise? As an agency of the elected representatives, it must consider the interests of all of the people of the province. If it were to shut down or reduce operations, there would be a decline of government revenues—of stumpage revenue, of gasoline tax, of the tax on consumer goods and many others. The loss of revenue will result not only from the lowered employment by our corporation but also from the general decline in economic activity which will result in the area. We must take into account that people would be thrown out of employment and may become a charge on the unemployment insurance fund or on the social aid funds of the province or the municipality.

Few would regard a Crown corporation as being a risk-taking enterprise, in fact, it is more likely to be considered timid and unenterprising, yet the factors it must take into account are such that it must "stick out its neck" a good deal farther than a private enterprise can be expected to do in the same circumstances.

Among the jurisdictional problems of the forest industry is that of labor relations. Organized labor claims the right to make, or at least to play a vigorous part in making, many decisions affecting various aspects of forest operations.

The Timber Board has dealt with unions through most of its life. While we have had difficult and prolonged negotiations and have been taken to conciliation, nevertheless, we do feel that, in a Crown or public enterprise, there is a very considerable advantage for both sides of this relationship. Many workers realize that it makes a real difference to them that the profits of their enterprise go into the public treasury to be used for hospital services, welfare services, etc.

If the true public interest is understood by the public enterprise, and by all the other institutions involved, there can be little reason for friction and conflict and the extra costs that these produce.

One difficult problem of a jurisdictional nature which you have in other parts of Canada is that of the disposal of standing saw timber to operators. Many different plans for this transaction have been developed and tried but it appears that none has proven to be really satisfactory.

One difficulty here is that a sale of standing timber, which may appear quite equitable at one time, changes with a change of conditions. As the operator must usually make an investment in roads, camps

and equipment, the sale must be sufficient for several, and sometimes many, years of operation. Changes in the market, in the economy and technological developments sometimes convert what was once an equitable sale into what looks like a giveaway of public property.

Government officials, charged with the responsibility of selling standing timber, cannot be expected to forecast developments years in advance. It is very difficult to protect the public interest adequately in such sales.

The Saskatchewan Timber Board method of operation overcomes these difficulties. The timber remains public property while it is logged, sawn and processed, and its disposal takes place only when it is sold as a finished product. The producing contractor has his contract price and is guaranteed his reasonable costs of production, but, should there be a rise in the market, the higher income accrues to the public benefit. The public interest is well protected provided, of course, the job of processing and marketing is carried out efficiently.

Our experience shows that there is good reason to be confident that the development of public enterprise in areas where there are numerous small lumbering operations, can bring great benefits to this section of the industry, can enable it to extend operations so as to utilize more of the allowable cut, can reduce costs so as better to meet world competition, can provide much additional employment, bring a greater measure of stability to the industry and strengthen our economy.

#### Discussant (Mr. BRODIE)

Having thoroughly studied the Background Papers we now turn to the identification of the major problems requiring attention in the forest resource field and the possible courses open to achieving solutions to these problems.

Several studies have found that world demand for pulp, paper, paperboard, lumber and other products manufactured from primary forest production will almost double by 1980. Will Canada participate in these new markets? Have we the basic resources? Can we produce at competitive prices?

The time is already here when intensive forest practices should replace the extensive measures of the past. One of the great hazards in the drive for resources for tomorrow is the impression among forest administrators in government and industry that expenditures on intensive forest management are not justified until all the allowable cut within the reach of extensive forest management is utilized.

After reading the Background Papers we cannot help but come to the conclusion that production cost is the most important problem governing the present



state and especially the future development of our forest industries. As my experience has been almost wholly in provincial administration in Ontario, I know you will expect me to cover that part of the discussion which bears on provincial administration.

#### *Federal taxation*

When the federal government placed the natural resources under the jurisdiction of the provincial governments, it was with the object of providing those governments with a source of income to defray the costs of provincial administration generally. Since 1867, as a result of increasing costs to the provinces, first having to do with forest fire protection and more recently sustained yield management costs, the net income from Crown timber to the province has declined; in Ontario and probably in other provinces as well, income from forest resources barely meets the costs of their protection, management and administration. It is the firm belief of many that if we are to have resources for tomorrow, on a competitive cost basis, increasing expenditures will be required on planting, silviculture, etc., on largely depleted lands of higher-than-average productivity close to markets and manufacturing plants. The alternative to such expenditures is for industry to go farther and farther afield, operating in stands of lower yield year by year, incurring costs that far exceed those of growing timber well-located as regards operating costs and marketing.

One obvious solution to the problem of providing adequate funds to conserve the forest base would be to take from the total forest and forest-based industry tax revenues, federal and provincial, *pro rata* on the basis of gross receipts, adequate funds to administer, protect and manage the forests, and allot these to the responsible authority, the balance being the net taxes or revenues of the two levels of government. Other solutions would involve the federal government in direct expenditures in maintaining the resource, or making grants to the administrative authority to accomplish the same end result. All of these should, ideally, be based *pro rata* on the proportion of total tax and other revenues received. It appears unlikely that many of the main measures for placing our forest industries on a competitive basis in the future will be given material effect unless the basic problem of adequate funds to provide well-organized, active forest conservation programs is solved.

#### *Provincial taxation*

Even with the increased volume of the annual cut and increased stumpage dues, provincial forest revenues in Ontario have barely matched provincial expenditures on forest protection and research, and inventory, management and reforestation programs.

There is no indication that total taxation on industry is unduly burdensome at present levels, and there may be room for increasing royalties to cover provincial expenditures.

The system of provincial taxation has grown up over many years. I doubt if anyone will defend it as perfect. Some believe that stumpage dues should move in accordance with changes in the market price of the industry's principal products. Another proposal that has won many recent adherents is that the province charge a ground rent, a type of economic rent that is related to the productive capacity of the land, its nearness to mills and markets and other relevant factors.

Provinces are interested in dollar revenues from forest resources, and industry is concerned with the effect of higher taxes on earnings and company profits. Neither party is concerned about the system as such.

It leads to clearer thinking on the subject if we consider timber standing on Crown lands a commodity for which there is a market. It has a value which can be determined by offering it for sale on a free and open market. There are from 45 to 75 public timber sales in Ontario each year which give a pattern of stumpage values province-wide. Not all timber licences are issued following a sale of this kind. Permit licences are issued for small quantities of timber, locally through the district office of the Department, and larger licences are allocated, mainly to keep established industry supplied, with the approval of the Lieutenant Governor-in-Council. For valuing the latter, one of the methods used is what might be called "comparable transaction evidence" which is the assessment of the stumpage value of a new logging chance, by minutely comparing costs item by item with adjoining sale areas and arriving at the comparable stumpage value. Almost all timber licences are subject to stumpage appraisal prior to issuance.

There is a maximum stumpage price which a province can assess on Crown timber. If a province, through the use of its legislative power, charges more than the true value of the timber, industry will tend to go bankrupt or move elsewhere; this is inevitable. It matters little either to industry or the province whether they pay stumpage or pay its equivalent.

The province must inevitably pay the cost of maintaining the productivity of the forest. If the licensee actually does the work (and I think in the interest of lower cost he should) he is reimbursed, either through a reduction in Crown stumpage charges, or a cash payment. The only alternative is to grant to the licensee an interest in the ensuing crop, and there are serious objections to this. The licensee would thus acquire a proprietary right or interest in the licensed area in perpetuity without it

being consciously granted by the Crown. It is felt in some circles in the east that if we are to grant any proprietary rights in a licence, we should probably go the whole way and sell land and timber in fee simple for its real value. Public opinion and long-standing government policy will not allow the latter course. Since the only incentive to industry will be payment of costs by the Crown, such matters as exploring new methods of assessing Crown stumpage charges or measurement of timber for assessment of stumpage charges will be determined solely on the basis of lowest net administrative costs on this operation itself.

#### *Taxation of private forests*

The property taxes falling on much of the private timber lands in Canada in many cases far exceed net revenue even if the full potential of the land is attained. The tax becomes confiscatory in many cases. According to Johnson and Holt, "A yield tax plus a nominal tax per acre is the fairest kind of forest tax." The solution is a simple one, but how it can be implemented through literally thousands of local municipalities is a problem which can be handed over to the Forest Extension Services.

The private timberlands of Canada are in a depleted state and capable of providing only minor revenues to the owner. What is needed is considerable investment of capital to raise their production.

#### *Legislation*

The Crown Timber Act and Regulations for Ontario contain clauses which specify wasteful practices in forest operations and set penalties for their infringement. The legislation is adapted to the extreme case. However, most of the cases which do occur are not of the extreme types, so that only occasionally is the full force of the legislation used.

It is rather surprising that legislation did not come up for discussion more frequently in the Background Papers. Much of the provincial forest legislation of today follows the same form as that first laid down in 1867. There is in many cases only a vague relationship between administrative practices and the legislation on which these practices are based. I agree, at least partially, with Pepler that legislation should have a clear statement of policy and that only the statutory authority to implement that policy should be incorporated in the legislation. It would then be the task of the administration . . . to give material effect to the policy.

#### *Forest research*

There is probably no activity in which this "Resources for Tomorrow" Conference can be of greater value to the future development of our forest resources and forest-based industries than in sorting

out the rather complex jurisdictional tangle in which Canada finds herself with respect to research. The problem arises from the responsibility of the provinces in administering the forest resources, leaving the federal authority with virtually no administrative functions. Combined with this is the nature of many research problems, which transcend provincial boundaries and even international boundaries. On both technical and economic grounds the federal authority should play a large part in research. Another important consideration is that the more fundamental aspects of research require large expenditures on laboratories and specialized equipment, as well as the ability to attract and hold staff of the highest caliber. One central organization is obviously indicated to carry out a function of this kind.

If forestry is to develop normally, we must have the best-trained men coming into the profession, and if research is to develop, we must have real scholarship in our postgraduate work. Let us assure that adequate funds are made available to universities to develop research programs, postgraduate work and forest schools generally.

The federal authority should assume responsibility for the fundamental research field in forest management and forest products. The field of operational research in Canada must be allocated to the provinces and to industry in their respective areas of operation.

How can the research program be directed and controlled where there are two levels of government, universities and industry all involved, both as participants and in varying degrees as users of the results of research? One possibility would be to set up a Forest Research Control Board under the Federal Department of Forestry which would have somewhat more than an advisory function. Membership in the Board would be drawn from federal, provincial, university, and industrial sources. We must plan for an almost incredible expansion of both the scope of our research and its intensity.

#### **Discussant (Mr. MAHOOD)**

The challenge is to increase our output so that the Canadian forest economy will grow, and by such growth the average Canadian citizen will prosper through employment and a sound and attractive standard of living.

The statistics and the Background Papers indicate that opportunities exist to increase the pulp and paper industry by 60 per cent and the lumber industry by 30 per cent within 15 years.

We are told that there are ample resources and the Canadian allowable cut could be increased fourfold. The problem in forestry seems to be "cost of production."

For the first time, Canadian products face competition throughout the world from foreign nations

and groups of nations working as a team. These nations have planned dynamic programs aimed at increased production of low-cost high-quality products. This is a concerted drive for market supremacy, manned and directed by skilled leaders, supported by public desire and the co-operative goodwill of labor.

In terms of per capita productivity, in constant dollars, since 1956 our productivity has declined while the rest of the western world has increased its productivity.

Canada's struggle for export markets will be further weakened and the margin of opportunity for expansion narrowed if we, as a nation, are forced to add further to the cost of production by the taxes necessary to support or subsidize chronic unemployment. Our competitors do not attempt to carry such a load of cost on to the export markets of the world.

The forest industry is irrevocably linked to the whole Canadian economy. If Canada does not succeed in curing its economic ills then the forest industry—because it is an export industry—is the first to suffer. First attention should be given to solving the problems in the overriding fabric of the Canadian economy.

In the past we have been living off forest capital. The success of the industry has been equally dependent upon this dipping into the bank as the skill of our management or the energy of our productive effort. This is because the industry has been founded on the best timber areas, which are close to transportation, and the choicest species.

This era has ended. Much of the area remaining contains inferior species and difficult terrain, and is remote from transportation. These areas will have production costs well above the average achieved in the past. It is these areas which must support the major portion of our future industrial growth.

This habit of living off the best forests has deluded many Canadians.

The obvious need is for intensive management on the most productive acreages, close to the centers of production, which are capable of growing low-cost wood on short rotations. Managers, both private and public, have expected timber in remote areas would become economically available due to rising prices for the products. The error has been that world competition for sales of forest products holds product prices down, and where prices have risen the domestic cost spiral has so eroded operating margins that Canada faces an actual and increasing deficit of economic timber. This neglect of the cutover lands close to industrial centers is likely to be one of the greatest forestry errors of the past two generations.

We as a nation, dependent on forests, cannot prosper if we carry forward these delusions into the 1960's.

My suggestions for improving the forest output are:

1. Get action started to improve the Canadian economic growth.
2. Take steps to improve the profitability of the forest industry, thereby providing genuine incentive for expansion through the investment of new capital in quantity.
3. Establish a national trade policy that ensures a growing export of products in two-way trade with our trading partners throughout the world.
4. Reconcile the jurisdictional tug of war over taxation of the resource industries and get the industry out of the middle of this tug of war.
5. Put cost-benefit studies on forest regulations to ensure these regulations are justified in the short- or long-term interests of economic growth and the capacity of Canadian industry to employ our people.

## DISCUSSION

The following assumptions and principles were agreed upon:

1. The physical supply of forest resources is adequate to allow a substantial increase in output of forest products on a sustained yield basis.
2. The world demand for forest products will continue to increase at a rapid rate and almost double by 1980.
3. The problem for Canada lies in meeting com-

petition in the sale of forest products on world markets.

The ensuing discussion ranged over the following aspects related to improving the environment for increasing forest output: jurisdiction, legislation, research, management, royalties and marketing. Tentative conclusions were reached, but the Workshop postponed final consideration of recommendations until Friday morning.



## FORESTRY WORKSHOP A

Friday, October 27

Forestry Workshop A gave final consideration to the problems posed in its topic assignment and agreed to the following conclusions and proposals:

*Jurisdiction*

To provide improvement in the lagging economy of forest industry, taxation and public charges at all levels of government (in particular provincial and federal) should be designed to encourage the optimum development of the forest resources and industries. To this end these matters should be studied by a qualified agency and the results should be referred to all administrative authorities for the determination of policy.

This policy should provide for:

- (a) A profitability rate that allows for expansion and revision of existing facilities,
- (b) Taxation incentives to stimulate the development of new industries,
- (c) Extension of research in product and process development,
- (d) Economic replacement of forest stands on lands deemed desirable.

Consideration should be given to the advantages of public enterprises and co-operative organizations in the development of forest resources and the marketing of forest products providing fair competition is maintained.

*Legislation*

Provincial legislation should be reviewed and revised where necessary to stimulate and facilitate modern policies of forest administration.

*Research*

There are four bodies interested in carrying out forest research. Universities and the federal government should be well organized, equipped and staffed to carry out more fundamental lines, and provinces and industry should be organized to carry out more work related to operations systems. More research should be directed toward immediate problems without curtailing long-term research. Introduction of an expanded federal, provincial and industry system of grants to universities and for scholarships for outstanding postgraduate students is recommended. It is suggested that co-ordination of such a research plan might be entrusted to a board made up of representatives from universities, the federal and provincial governments and industry.

*Management*

Since our ability to compete with other countries is affected by the cost of forest operations, our forest policies should be improved toward:

- (a) *High-intensity* management in easily accessible regions;
- (b) The orderly development of less accessible areas through construction of access roads and other necessary improvements.

*Royalties*

In the interest of stimulating forest management and cost reduction, consideration should be given to a system of economic rent in lieu of stumpage charges. This rent should be based upon the productive capacity of the land, its nearness to mills and markets and other relevant factors.

*Marketing*

In view of the facts that Canada has lost its long-privileged situation on the world market of forest products and has lost sales of pulp products due to the recent integration of the U.S. pulp and paper industry, it is recommended that:

1. The federal government continue to work toward improving trade policies exploring all possibilities in a manner to increase sale of forest products on world markets and in trading blocs such as E.E.C., E.F.T.A., Asia, Africa and Latin America.
2. The federal government be commended for facilities it provides for the sale of forest as well as other products in export markets, and that industry should avail itself more fully of these facilities.
3. Consideration be given to reorientation or change in the structure of our forest industry to enable the products to be competitive on the world markets.

*Technological improvements*

1. Every effort should be made to improve the technological level of wood-using industries in order to permit them to utilize more effectively the results of research and thereby improve the efficiency of their operations.
2. In the sawmill industry improvement in marketing and methods of production should be encouraged to counteract the constant proportional decrease in the demand for lumber. Investigation should be stepped up concerning progressive automation in

sawmills and the conversion of low-value wood into a series of more attractive and more competitive products.

*Land-disposal policies*

Another point was discussed but the meeting failed to reach agreement on it. The statement as placed before the meeting was as follows:

"Land disposal policies should provide for allocation for forest use, consideration being given to

the ownership pattern of forest lands that will result in their most effective contribution to the total economy."

In support of this statement it was argued that land should be granted for forestry as well as for agricultural and other uses. In opposing this statement it was argued that grants of land by the Crown are not conditional as to the use to be made of the land and the Crown can control use of land only through leases or licences, as is now being done.

# Forestry Workshop B

TUESDAY, October 24

What adjustments in management will be required to hold costs at competitive levels under greatly increased production requirements?

- Chairman:** J. MILES GIBSON, Professor Emeritus, Forestry, University of New Brunswick.
- Co-Chairman:** J. W. B. SISAM, Dean, Faculty of Forestry, University of Toronto.
- Lead-off Speaker:** F. S. MCKINNON, Chief Forester, British Columbia Forest Service.
- Discussants:** F. A. HARRISON, Vice-President, Woodlands, Canadian International Paper Co.  
LOUIS J. LUSSIER, Professor of Operational Research, Laval University.
- Rapporteurs:** L. R. BARRAS, Director, Forestry Restoration, Province of Quebec.  
J. T. B. KINGSTON, Economist, Resource Industries Division, Canada Department of Trade and Commerce.

## Chairman (Mr. GIBSON)

In 1906 at the time of the first Canadian Convention in Forestry, there were under a dozen professional foresters in Canada. Forest services at the federal and provincial levels had not been organized. Fire prevention was almost unknown, the forest resource was described with far more emotion than fact. Now we are in excess of 2,000 foresters. We have well-organized forestry departments at Ottawa and in all the provinces as well as in all the major units of the forest industry. We have well-organized and effective fire prevention and control and our Background Papers show that we have a very good picture of the extent, quality and volume of our forest resource.

These same Background Papers, however, show that there is much information lacking which would enable us to give a correct answer to the problem that has been posed.

The chief concern of this Workshop is related to techniques and management rather than policies or administration. It may be difficult to discuss situations without some overlapping into the field of

policy, economics and administration, and speakers may have to assume that a favorable climate to long-term management will prevail.

Some of our problems will have to be considered in the light of a short span of time, say fifteen years, and others may require a time span equivalent to a rotation to show sound results.

The Background Papers indicate that the volume of standing timber in Canada is more than enough to meet foreseeable demands, if production costs are disregarded. There is a very definite problem of lengthening supply lines and the need of determining whether these can be offset by lower-priced wood from more accessible and better growing sites closer to the mill, but now cut over and only partially productive.

It is these and similar problems that should engage our attention.

## Lead-Off Speaker (Mr. MCKINNON)

The terms of reference for the discussions to-day indicate that we direct our attention to the adjustments which will be required to hold the cost of



production of forest products at a level that will enable our forest industries to compete on world markets during the next decade or so.

Nine excellent papers have been prepared and we are indeed indebted to these men for this background material. They have done an outstanding job.

Material for discussion purposes can be divided into broad fields, as follows:

1. Prediction of the economic climate and the conditions for which we should be planning our adjustments.

2. In the management of our forests, what adjustments must be made to meet the increased demands on our forests?

- (a) Annual allowable cut and its relation to future raw material requirements or area of land needed to produce requirements.
- (b) Protection of the forest resource from fire, insects and disease.
- (c) Regeneration of forest land.
- (d) Improvement of the quality and quantity of the crop.

3. Integrated use of forest land for production of wood crop, for recreation, for grazing and for mining.

4. Development of forest policy.

Canada is the world's leading exporter of pulp and paper products and in 1959 produced 20 per cent of all wood pulp and 55 per cent of all newsprint from non-Communist countries. Canada is also the world's leading exporter of lumber, supplying one-third of the volume traded. These exports represent over 80 per cent of our pulp and paper production and about one-half our lumber production, thereby illustrating not only the importance of the forest products industries in the Canadian economy but particularly the special problems facing the forest industries, dependent as they are on their sales in the markets of the world.

The markets for forest products are large and they are increasing, but they are also highly competitive. The long-term possibilities are promising but the short-term outlook over the next three to five years is not so favorable. It is perhaps traditional for us to be conservative, but just as there is the possibility that developments may occur which might restrict future growth, there is also the alternate possibility that developments can occur which would greatly increase the future growth of our export of forest products. Let us incline to the optimistic view.

Assuming that these predictions are sound, what expansion of our forest industries will be involved? It has been indicated that our export and domestic demand, as a whole, in 1975, will require about 55 per cent more wood than is now used. The 1960 requirements were 3.0 billion cubic feet and the 1975 forecast would call for 4.65 billion cubic feet.

Lumber producers will be called on for a 40 per cent increase. This should not present any great difficulty, as existing facilities working extra shifts could meet that demand and the limiting factor would appear to be availability of raw material.

The pulp and paper forecast indicates an increase from 11.33 million tons to 19.5 million tons. This is an increase of 8.2 million tons or 72 per cent, and it suggests that in Canada we will need, over the next 15 years, to build 51 new pulp mills of a 500-ton daily capacity to meet the demands on the industry.

If we assume that they were operating at 85 per cent of capacity, the existing plants would only produce 13.3 million tons of pulp and paper, leaving 6.2 million tons of new capacity to be built by 1975, or 39 new plants. The significance of this is that in 1958 there were only 128 mills in all of Canada.

We would not have any difficulty in sustaining these 39 new mills, and the problem of the resource manager will be to select sites for the new plants that will be such as to give the lowest possible cost for wood delivered to the plant. In the long run, the potential of the Canadian forest will be used only to the extent that it competes with costs of growing timber elsewhere in the world.

The full use of the natural productivity of all of the forest land in Canada is most unlikely in the foreseeable future, but long before this happens the highly productive accessible land should be yielding a great deal more than its natural productivity through intensive forestry practice. Any such management is assumed to be on a permanent production basis as the philosophy of sustained yield is commonly accepted by all governments in Canada and legislation designed accordingly.

This brings us to consideration of the basic elements involved in sustained yield management. First, and of paramount importance, is the matter of protection of the resource from fire, insects and disease.

The matter of adequate fire protection is of such importance to the Canadian economy that both the federal and provincial governments must find a solution. Funds must be found for pre-organization and establishment of suitable protection organizations, by contrast with the traditional procedure of setting up a skeleton organization and spending huge sums for direct suppression after fires start.

The expansion of our forest industries can progress only as wood of superior quality is available at low cost. In past years failure to secure adequate regeneration of desirable species on these accessible lands now forces us to go further afield for our raw material. The time is approaching when new industry, in seeking to become established, will balance the cost of securing wood from undeveloped old-growth stands in the hinterland against the cost of

harvesting their raw material from the highly productive accessible sites logged many years ago.

Research studies on a limited scale indicate that our forests can compete with countries practicing intensive forestry.

Research results must be available to provide a firm foundation for high-yield silviculture. Programs have been initiated in tree breeding and forest genetics, but much remains to be done. The federal and provincial governments should logically accept the responsibility for basic research. Studies in technological improvement and product research, however, are best conducted by industry.

Sound land use and long-range public interest should be based on a complete inventory of all natural resources on Crown land prior to their permanent assignment to one or more uses. No doubt in the future there will be occasions when productive forest land will be assigned to an exclusive use to meet the demands of a fast-growing population. However, as time goes on and the requirements for wood fiber increase, each area withdrawn from the productive accessible sites will become more significant, and greater justification will have to be presented for such withdrawal.

The objective of forest policy should be to secure for the economy as a whole the greatest possible present and future benefits from the forests consistent with the balanced exploitation of all resources. This implies integrated use of the forest and its development at a rate consistent with the probable demands upon it within the predictable future. A forest policy should set forth the aims with respect to both current and future operations.

A sound forest policy should be directed toward improved supplies of wood for future industrial demand and the development of new wood-using industries with provision for integrated use of forest land as required from time to time. The forest land ownership pattern in Canada is such that only our provincial governments can take a leading role in establishing forest policy. The basic principle of permanent forest production is established; now we are faced with the problems of implementation and this will involve a number of new policies.

#### Discussant (Mr. HARRISON)

Our topic for discussion is the management aspect in forestry. We are talking about costs in relation to world competition. We must find areas in which we can economize so that our forest products can be placed on world markets at competitive prices.

For the sake of this discussion, I have grouped these areas into four classifications: growing of wood, harvesting, manufacturing and marketing. All that we do in these areas must have a single aim in common—a net saving in costs.

I believe that in terms of wood growing, we can achieve most by attempting to accelerate growth on the best-suited lands located most advantageously to plants. In this way we will have such favorable factors working on our behalf as proximity to mills, easier access to labor and better transportation through established road networks.

In arriving at the best possible solutions, industry must have the active collaboration of governments and universities in the fields of advanced silviculture, proper woodlot management and effective protection of the forest against fire, insects and diseases.

A striking case history of land waste and improper utilization is contained in the recent Laval University Forest Research Foundation survey on marginal and idle lands in a limited section of southern Quebec. The study shows that out of the 12,000 square miles surveyed—and belonging to farmers—2,230 square miles, or 18 per cent have been abandoned and should be returned to the growing of trees.

There is no doubt in my mind that surveys of this kind are of the utmost significance if we are ever to achieve the best possible use of all our natural resources. The time is past when one could devise utilization of one resource without regard to others. We all agree that nature is indivisible and that in destroying one of its elements through unwise use we destroy the others.

With regard to harvesting, we must work toward greater mechanization of operations, development of new techniques in wood handling, the integration of all wood crops, whatever the end use, extreme care in ensuring regeneration and the limitation of undesirable growth and, of course, constant attention to reducing future fire hazards.

In marketing and manufacturing, much can be done to price our goods downward through greater efficiencies in our plants and mills and in transporting our products to markets.

In Canada we have the wood, the plants and the know-how to produce goods for the world markets. But other countries have the same advantages *plus* lower costs. The foregoing indicates areas where we can reduce their cost advantage and remain competitive. This must be the long-range objective of our industry.

#### Discussant (Mr. LUSSIER)

The competitive ability of the Canadian forest industry in the international market is not completely satisfactory. Unless drastic means are taken to improve the performance of the forest industry, the sustained increase of the costs of forest products will most probably restrain the expansion of the Canadian economy.

Since the productivity of the forest and the cost of raw material are largely dependent upon logging



techniques, it is appropriate to give some thought to this very important phase of forest management. I would like to restrict my remarks to this specific aspect of the over-all problem.

Mechanization of logging operations has been considered by management as the most promising solution to the problem of cost reduction. Highly diversified machines have made their appearance in the forest. The net result has been a noticeable increase in labor productivity, but in most cases the cost of raw material has continued to follow an upward trend. This is attributable to the failure to meet new management problems raised by mechanization. Moreover, the development of these systems has been done without giving too much consideration to the silvicultural aspects of the question.

The choice of a logging system which is, from silvicultural and economic points of view, well adapted to the environmental conditions is extremely difficult to make, and cannot be achieved solely on the basis of empirical knowledge. It must rely on systematic studies and be completed by the use of modern management techniques, such as opera-

tions research and statistics.

Development of forest classification systems, allowing definition of the work sites with enough accuracy to plan the operations properly, is also required. Forest surveys will have to be carried out in such a way as to obtain all the necessary basic information at reasonable cost.

Reduction of the cost of raw material will also depend on the efficiency of the operational plan, and the adaptation of supervisory personnel to the new ways of exploiting the forest.

The successful development and implementation of appropriate logging systems will largely depend on the university training which will be given to the young foresters. University education will have to be modified in order to provide the forest engineers with the necessary tools to meet the problems raised by mechanized logging techniques. Logging courses should not consist of mere descriptions of machines and methods but should rather define the economic, management and silvicultural problems raised by the use of various man-machine systems, and describe the scientific approach to their solution.

## DISCUSSION

After the talks by the lead-off speaker and the two discussants, the Chairman suggested that the day's discussion might follow this agenda: (1) extensive and intensive forest management; (2) harvesting; (3) protection; (4) education; (5) research.

### 1. *Extensive and intensive management*

Shortly after discussion was initiated on this topic it was proposed that we need to establish criteria on a national basis for economic justification of extensive or intensive management. It was suggested that a land classification on a biological basis was required to determine the best use, either single or multiple.

It is important to balance costs of operating in distant stands compared to costs of growing wood on areas close to plants and/or markets. The idea here was whether, when planning future operations, it was cheaper to extend supply lines to reach raw material from unmanaged areas or to obtain wood from future managed stands close to markets. It was felt that under certain conditions it may be cheaper to extend supply lines to obtain raw material (i.e. extensive) whereas under different conditions of time or location it may be cheaper to procure wood by means of intensive methods. The suggestion was made that the answer to this was not known and that case studies should be made to determine costs of production under extensive and intensive

methods in Canada. One participant mentioned that wood production costs are decreasing in certain regions outside Canada while costs in Canada are still increasing. Therefore, we must study costs of production in competitive countries. Another participant pointed out that with the time (i.e. rotation) involved in growing trees one must have faith in future demand for this raw material before investing sums on intensive management methods.

### 2. *Harvesting*

The group agreed that no company or country has a monopoly on mechanization or the application of machinery to the harvesting of timber from the forest. A number of visits and study tours have been arranged in the past through trade associations and government to other areas and countries. One participant mentioned that more progress has been made in logging mechanization during the past four years than during the previous 50 years. However, this recent stimulus to mechanization has created problems for the silviculturist and for labor. There is probably an accelerated need for understanding between management and labor concerning the increasing use of machinery. This understanding should probably come from management or government with increased information on mechanization and the need for increased training.



### 3. Protection

The group favored a strong recommendation on forest fire suppression, not only because of direct losses to the economic life of the country but also by reason of the less obvious losses such as burned-over watersheds, loss of recreational areas, and loss of game forage and habitat. Mention was made of the assistance received from the Department of National Defence in the use of troops for emergencies such as severe forest fires. The work of certain committees in the field of fire protection, composed of industry and government and including the Defence Department, was commended.

The study group was very strong in its recommendations for grants from the federal government for access roads. It was felt that roads were required for access to forest areas and for forest protection purposes. Such roads should be constructed both on licensed and non-licensed Crown land. Grants for

these roads might come from the Access Roads Program of the federal Department of Forestry or from the Roads to Resources program of the Department of Northern Affairs and National Resources. It was stressed that the location of such roads be well-planned.

In regard to protection against diseases and insects, favorable mention was made of the Pest Control Advisory Committee in British Columbia. The group was of the opinion that regional advisory forestry committees composed of industry and government (federal and provincial) should be set up throughout Canada. However, the group felt subcommittees should be formed to study major sectors, e.g. pest control.

Time prevented completion of the agenda, and further discussion was held over until Friday morning.

## FORESTRY WORKSHOP B

Friday, October 27

Forestry Workshop B completed its discussion of education and research, held over from Tuesday. The group then reached consensus on the following overall conclusions and guidelines.

### 1. Type and intensity of management of forest land

In order to establish the basis for decisions on the type and intensity of forest land management, it is agreed that for the country as a whole:

- (a) Criteria of economic productivity be defined, taking into consideration such factors as productive capacity of land and access to markets.
- (b) A forest land use classification be made in which criteria are taken into account.
- (c) A study be made of trends in social and economic pressures developing with regard to the use of forest land in Canada.
- (d) A study be made of areas outside Canada that are competitive on the forest product markets of the world, and of the factors affecting their competitiveness.

It was agreed that the last item (d) should be given high priority in any economic study program, to be undertaken and completed as quickly as possible.

In connection with this whole subject, the Workshop discussed and approved (with slight modification in wording), a proposal which had been approved in an earlier workshop, that an Economic

Advisory Committee be established. The details of this proposal are set forth under (7) below.

### 2. Forest fire protection

In view of the continued serious losses in timber and forest soil fertility through fire, strong support was urged for all programs aimed at improving this situation through education, research and other means. It was emphasized particularly that every effort must be made:

- (a) To reduce the incidence of man-caused fires through more effective information-education processes.
- (b) To increase the effectiveness of basic fire-control organizations in order to minimize the spread of fires that do occur.
- (c) To develop further the co-operation and services provided by the Department of National Defence for the provincial forest services, and the co-operation between the forest services themselves in order both to deal more effectively with emergency situations and to help prevent emergencies from arising.

### 3. Access roads programs

In view of the fundamental importance of roads in protecting forests from fire loss and also in making stands of mature merchantable timber economically available, it is strongly urged that the Access

Roads Program, as sponsored by the federal government through the Department of Forestry, be continued.

#### 4. *Co-operation in pest control*

Having in mind the successful functioning of the Pest Control Committee of the British Columbia Loggers' Association, it is suggested that consideration be given by the proper authorities to the establishment of similar bodies within the other provinces.

#### 5. *Harvesting developments*

With the rapid development of equipment and techniques to aid in making mechanical logging more efficient, problems are arising that affect many facets of the over-all operation including labor relations, forest protection, silvicultural objectives, etc. These problems require careful study and evaluation and to this end it is suggested that their occurrence and the associated pattern of development be brought to the attention of the proper authorities for investigation and also to the appropriate departments of universities for information.

#### 6. *Research*

The need for research in connection with the development, management and proper use of our renewable resources is generally realized, and strong support is given to the recommendations of the Research Workshops A and B with particular emphasis on the need for an authoritative body to develop and co-ordinate support for research in the renewable resource field.

Furthermore, in order that the research needs may be met as effectively as possible, it is agreed that:

- (a) Much greater and broader support be given to both university research and those wishing to undertake postgraduate studies through the provision of grants and fellowships.
- (b) Much stronger lines of communication be established between (i) the various authorities engaged in research in the same general field (e.g. forest economics) throughout the country, and (ii) those administering research and those requiring and making use of the results.
- (c) For the information of universities in particular, an evaluation or priority rating be made of subjects or fields in which studies and trained personnel are most urgently needed.
- (d) More attention be given to the stratification of qualified staff at the universities in order that adequate provision may be made for research and the supervision of postgraduate programs as well as the teaching of undergraduate students.

#### 7. *Economic advisory committee*

The Conference has recognized in its deliberations the fundamental problem of rising costs in the forest industry and its changing competitive position in the world trade. This Forestry Workshop recommends that an Economic Advisory Committee be established, adequately representing industry as well as government and university specialists, to explore those areas whereby co-operation could assist the forest industries in competing in world and domestic markets and to recommend those specific areas of economic study and research which would assist government and industry in the development of mutually effective short- and long-term policies for the forest industries and the economy.

# WILDLIFE

Tuesday, October 24 and

Friday, October 27, 1961

"If wildlife does lose its place in our lives it will not be because we have no scruples about it, or because we do not want our pride in progress to be unalloyed with doubts and reservations about lost values. It will be because our inner voice lacks both the power and eloquence to cry down the sacrifice of a permanent value to a *fast buck* . . . . We have a conscience about wildlife, but it is still, for the most part, a private conscience. As a public conscience is never more than an upwelling of private consciences, we have the basis of wildlife conservation. Conscience needs to be developed into a personal ethic and a sense of national responsibility."



# *Assumptions and Definitions*

The deliberations of Workshops A and B were based on the following assumptions and definitions.

It is assumed that:

1. Wildlife will consist of all species of mammals, birds, reptiles, amphibians, and fish. The concept can also include invertebrates and floral aspects of the environment.

2. No species shall be allowed to become extinct through the instrumentality of man.

3. Wildlife uses will continue to grow as population and urbanization increase.

4. With increase of population, there will be an intensification of the use for other purposes of the better land areas that will alter their wildlife values.

5. Management based upon continuing research can maintain valuable wildlife at useful levels.

6. Almost all use of wildlife in Canada is recreational use, but some primary use for food, clothing, and commerce will continue.

7. Management will seldom be uniform throughout the nation, for it should be adjusted to the requirements of various jurisdictions and to local conditions.

8. Wildlife in Canada has a substantial and varied value that can be measured qualitatively as well as quantitatively.

9. In wildlife management, aesthetic considerations have a status at least equal to that of economic considerations.

10. Wildlife not yet reduced to possession will continue to be vested in the Crown and will therefore be a public responsibility.

11. The wildlife biologist should assume some re-

sponsibility for the provision of leadership in the fields of wildlife management and the management of wildlife habitats.

12. Private organizations and individuals will and should contribute to the development of a public ecological conscience, and will influence the formulation of policy.

13. *Ideal populations* of wildlife species will be at those levels of population that will:

(a) Maintain themselves without serious disturbance of the ecology;

(b) Be required to satisfy the public need for recreation, nature study, scientific study and commercial interests without destruction of the habitat. Compatibility with other interests, such as agriculture, public health, public safety and industrial development should be sought through mutual adjustments.

14. *Adequate habitat* will be that type, quantity and quality of living space that will permit the production and distribution of ideal populations of the various species of wildlife in which we are interested.

15. The limitation of utilization depends upon:

(a) The philosophy of the individual and his total experience,

(b) The available supply of wildlife, and

(c) The availability of access.

16. Utilization can be divided into consumptive and non-consumptive categories and each should receive equal consideration.

17. Some kinds of wildlife or some densities of populations may be harmful to other human interests and may require control.

# Wildlife Workshop A

TUESDAY, October 24

## Maintaining adequate habitat for the production of wildlife population.

- Chairman: I. McT. COWAN, Head, Department of Zoology, University of British Columbia.
- Co-Chairman: YVES DESMARAIS, Faculty of Science, Laval University.
- Lead-off Speaker: T. A. HARPER, Assistant Director of Wildlife, Saskatchewan Department of Natural Resources.
- Discussants: C. H. D. CLARKE, Chief, Fish and Wildlife Branch, Ontario Department of Lands and Forests.  
CLARENCE A. MASON, Director of Wildlife Conservation, Nova Scotia Department of Lands and Forests.
- Rapporteurs: W. A. FULLER, Assistant Professor, Department of Zoology, University of Alberta.  
GASTON MOISAN, Assistant Professor of Biology, Faculty of Science, Laval University.

### Chairman (Mr. COWAN)

In his opening remarks the Chairman made several suggestions: that the discussions proceed through steps one to four as outlined in the agenda, and that steps five to seven be considered in a group; that the leadership groups of Workshops A and B meet Wednesday evening to discuss progress and plan Friday's discussions; that emphasis be placed on problems that cannot be solved by a single province, and that discussion be directed toward anticipated recommendations.

### Lead-off Speaker (Mr. HARPER)

The purpose of this presentation is to attempt to review the information presented in the various papers prepared for the Conference pertinent to our topic for discussion, "Maintaining adequate habitat for the production of ideal wildlife populations." Since the Background Papers have been available to you I will not quote exact sources.

Wildlife, as exemplified by the attention it has received in the planning and organization of this Conference, is an important renewable resource. The resource is used by the people of Canada in a variety of ways, most of which are not identifiable in economic terms; or if they are, there is an unwillingness either to accept the values placed on wildlife or to recognize their relative importance.

Historically, Canada's wildlife resources were, and in the more remote areas still are, essential sustenance for the aborigines. The fur resource and its availability determined the pattern of exploration. Wildlife also played a significant role in providing food and clothing materials for the first settlers. The existence of game laws and natural history societies in the early 19th century is evidence of our early concern to maintain this resource.

The fur resource in Canada provides a direct annual economic benefit to the national economy of \$10 million. Estimates respecting expenditures of Canadian hunters indicate they spend \$105 million on their sport annually. The expenditures of non-resident hunters are not known, nor are there data available respecting sport fishing. Our wildlife resources in Canada are of considerable value to tourism. With care, these resources can be exploited to great advantage, but it should be axiomatic that Canadians receive first consideration.

Perhaps the most important values of wildlife are those that are the most difficult to rate in dollars and cents. The satisfactions derived from wildlife are obtained in various pursuits, such as hunting, fishing, nature study, nature photography, etc., and can only provide their maximum return in beautiful, satisfying, unspoiled surroundings. It would appear in much of the recent development for out-

door recreation that little attention has been given to the total picture. Wildlife has been virtually forgotten in the rush to build picnic and camp sites. Wildlife should be considered in outdoor recreational planning, and the management of the wildlife resource should be such that it serves as an important component of the resource base of recreation. This is of particular importance in certain regions and has been specifically noted for the Atlantic Provinces.

There is little doubt that Canada's human population will continue to increase. Nor is there any doubt that there will be continued economic development in Canada. The agriculturists indicate that many people are expected to leave the farm labor force, and large areas of land will cease to be used for ordinary farming—both developments owing to increased mechanization, specialization, and technology. It has been suggested that the important questions are whether the pressures of increased population and economic development will be irresistible and whether they can be modified so that their impact will not be entirely destructive.

Canadians have more leisure time than ever before, and this trend is expected to continue. This has created greater demands on day-use outdoor recreation, which in turn has prompted greater interest in nature study as well as increased demands for hunting opportunities close to urban centers. With few exceptions this latter demand has resulted only in decreased facilities owing to increased posting of land. The exceptions may be in those areas where shooting preserves have been established. Under proper management, farmed and unfarmed lands near urban centers can provide wildlife recreation opportunities. It is likely, however, that wildlife lands will be sacrificed for immediate economic gain.

Papers presented in the recreation section of this Conference recognize leisure as a national problem. Specifically, it will be the problem of how to provide for the varied uses to which all the people wish to put their leisure. The government is faced with a formidable challenge in terms of making available the necessary physical and financial resources.

Forestry interests have also felt the pressures of increased demands for other than commercial uses; and recognize the growing importance of multiple use of forest lands to secure maximum public benefit in meeting commercial and social needs. There is also recognition of the fact that the best plan for the exploitation of our forests is governed not only by biological and economic factors, but also by social and political considerations.

This points up the broad question of whether or not we can reconcile our vision of nobility, beauty, and permanent values with our desire for immediate economic gain, prosperity and what some term pro-

gress. The therapeutic value of nature is recognized, yet funds to preserve it are reduced so that more money will be available to provide institutional facilities to look after those who perhaps would benefit from more contact with nature. Canadians have a conscience about wildlife, but it is kept too much within us and therefore is underestimated by our legislators. If sound wildlife conservation programs are to be expected, the public must make its demands known to the legislators in a forceful manner.

Wildlife must have a place in which to live. Each species has its own special habitat requirements, with some species more specific in their needs than others. Some species adjust readily to habitat changes, others not at all. In the various vegetational regions the only major changes have occurred on cultivable lands. Here, as well as in our managed forests, an apparently improved environment has been provided for some species, as evidenced by increased populations and extended ranges. Other species that have not been able to make the necessary adaptations have declined in numbers or disappeared. Thus wildlife production may conflict with other interests, and because of the lack of recognition for wildlife values, the other interests receive first consideration irrespective of how well founded the possible economic gain may be. Unfortunately, agriculture is slowly but surely crowding out great wildlife resources. Migratory birds are perhaps the most spectacular of these. The Migratory Birds Convention Act did provide a means for eliminating many abuses to this resource, but primarily through regulation of utilization. The Act, however, failed to recognize the importance of providing suitable habitat to maintain the resource on a long-term basis.

During the early years after the ratification of the Migratory Bird Treaty, Canada appeared to be more aware of the needs of migratory birds than did the United States. In 1925 Canada set aside several habitat areas in Saskatchewan and Alberta by Order-in-Council, which included the following statement: "That the Great Plains region of Canada contains probably the most valuable breeding grounds in North America for the wildfowl of the continent and that it is important that measures be taken to set apart permanently certain areas for the propagation of bird life, a resource of economic value in providing sport and food... That the advance of settlement, following cultivation of the land, the drainage of lakes and marsh areas for development purposes has seriously restricted the areas suitable for the propagation of wild waterfowl and under present conditions it is necessary that proper means should be taken to check the decrease in the number of these birds and to guard against the danger of extermination..." This statement is



equally true today except that the urgency of the need for action is many times greater than it was in 1925. In addition to the establishment of migratory bird sanctuaries, a number of public shooting areas were established in the Prairie Provinces the same year, thus assuring production areas on the one hand and opportunities for the public to harvest this production on the other.

This was a most enlightened approach, but was not transferred to the Prairie Provinces along with the transfer of responsibility for resources in 1931. In fact, at that time the federal government appears to have shed any further responsibility for migratory birds except to regulate the harvest. Yet the federal government does hold the responsibility for migratory birds.

In the United States it was realized that protection alone was insufficient to maintain waterfowl numbers, and in 1929 legislation was enacted which authorized appropriations for land acquisition and habitat development. Later, to provide additional funds for acquisition, the Migratory Bird Hunting Stamp Act was enacted, which required every waterfowl hunter over the age of 16 to purchase a special stamp each year for the fee of \$1.00. This fee was increased to \$2.00 in 1946 and finally to \$3.00 in 1958. Through this program, by 1959 3.51 million acres were put under management for waterfowl. In addition, the various states owned or controlled 2.5 million acres of waterfowl habitat. Most of this 6 million acres is in large refuges which provide migration and wintering habitat, but produce relatively few waterfowl.

Regardless of the strenuous efforts being made in the United States, the key to the future of waterfowl is in Canada and specifically in the prairie regions of Manitoba, Saskatchewan, and Alberta. Waterfowl managers on this continent are well aware of this. It matters not to the ducks where the money comes from to preserve and develop production areas in Western Canada, but without such a program we shall soon reach the point where there will be insufficient ducks to manage.

During the years of good water conditions on the Prairies (from a waterfowl standpoint), the mid-fifties, the bountiful production of mallards and pintails resulted in serious crop depredations. Even if the political climate had been favorable, and funds available to reserve waterfowl production areas, the complaints from agricultural interests were such that any attempt to do so was quickly smothered. It is obvious that there must be some leadership at the federal level plus a reasonable solution to the depredation problems before the provincial agencies can follow suit. Canada is definitely not fulfilling her obligations in this field of international waterfowl management.

In Canada much of the key wildlife habitat is Crown land and is thereby of public concern. In many instances where wetlands have been drained, only a small portion of the area concerned was in private ownership. The remainder was Crown land belonging to everyone, but it is only the landowners involved that are permitted a voice in determining the fate of these marshes. It is doubtful that the best interests of the public are being served in the disposition of Crown land when only one interest is considered.

A further example of this is found in the community pasture program on the Prairies under P.F.R.A. Extensive acreages in public ownership are developed for one purpose—agriculture. Yet much of this acreage could serve a wider interest if wildlife production were considered also.

Another example where disposition of public lands does not attempt to provide maximum public benefit is found in the policy of agricultural and grazing leases in some areas. The farmer or rancher is permitted the same rights respecting trespass as if he owned the land so he thus can prohibit wildlife use as he sees fit. In ranching country one individual may control thousands of acres of Crown land for periods in excess of 20 to 30 years for an annual rental fee of a few cents per acre.

In the United States we find various federal agencies competing with each other over wetlands, some to destroy; others to preserve. Here in Canada both federal and provincial governments should refrain from subsidized drainage where the only justification is political expediency. One of the greatest threats to waterfowl habitat lies in drainage programs subsidized or promoted by government organizations concerned with little else than expanding their own interests. It is hoped that in Canada we will have the forethought and determination to prevent the situation from deteriorating further.

It is recognized that the major waterfowl problem in Canada and on the North American continent is one of habitat preservation. But in Canada a concerted effort is not being made to solve it, owing in part to public apathy that has resulted from a lack of understanding of the situation. Of equal or perhaps greater importance is the undesirable political climate that has been created in the Prairie Provinces because of the seriousness of crop depredations in some years. It is true that federal agencies in both Canada and the United States have recently recognized the significance of crop depredation, but only after years of continued pressure from wildlife agencies of the prairies.

Admittedly, damage to cereal crops by migratory birds dates from the very beginnings of agriculture and was of particular importance where farming was

adjacent to waterfowl concentration areas. Fortunately, only a few species are significantly involved, chief of which are mallards, sandhill cranes and, to a lesser extent, pintails and widgeon. Other species are rarely found in grain fields, except geese, and they are seldom harmful.

The technique of swathing grain, essential to proper harvesting under most prairie conditions, has greatly increased the potential of wildlife crop depredations. While losses are not serious and widespread every year, they can reach tremendous proportions during cold, wet harvest seasons. When one considers the entire economy of the Prairie Provinces, the loss in the worst year is relatively small, but to an individual farmer who suffers the loss it can result in hardship.

A crop insurance program for wildlife damage similar to that in operation in Saskatchewan and recently inaugurated in Alberta seems to hold great promise countrywide. There are numerous actuarial and administrative problems, and there are opportunities for abuse. Nevertheless, such a program, paid for by all waterfowl hunters on the continent, will be necessary before real progress can be made in habitat preservation and acquisition.

Recently we heard proposals for an international waterfowl commission. An organization is desirable that could sponsor research to provide solutions to problems of international concern, such as management, habitat preservation and crop depredation. It is hoped that any gains in this area will be pursued strenuously.

By its very nature, forestry alters wildlife habitats. The effects on wildlife are variable and depend upon the species concerned and the practices used. The creation of clearings following logging operations and the resultant abundance of young growth benefits whitetailed deer. The same practices are detrimental to some other species. Forestry practices may profoundly affect fish in various ways. Removal of trees along water courses leads to increased water temperatures. Clear-cutting and destruction of ground cover leads to increased erosion which, in turn, increases the silt load of streams and renders the associated water areas less suited to fish production, to mention only one of the undesirable results from such practices.

Experience with uncontrolled fire in the Atlantic Provinces during the summer of 1960 has emphasized the fact that improved fire control is of vital importance to the wildlife resource. The severe fire season in many areas in 1961 must have resulted in tremendous losses to wildlife, but there has been insufficient time to evaluate the effects of the many fires throughout Canada.

Insects have become a major concern to both

forestry and agricultural interests. To combat the pests the chemical industry has developed a variety of effective sprays that can be applied over immense areas in a short period of time by the use of aircraft.

Studies on the Upper Miramichi River watershed forest area in New Brunswick showed that DDT at one-half pound in oil per acre killed up to 91 per cent of young salmon and seriously affected all size groups. Almost complete destruction of aquatic insects was noted, and some of these were not re-established 16 months later. When the 1956 hatch returned to spawn in their accustomed river system in 1960, the salmon run was greatly reduced. Due to the spraying of some tributaries the 1961 run is expected to be as low as 25 per cent of normal. Over the next few years the prospects for good catches of salmon are poor.

Encouraging progress has been apparent recently in the control of the spruce budworm with the application of DDT at the rate of one-quarter pound in oil per acre in forest areas where streams contain valuable fishery runs. A selective biological control (a crystallized derivative of the bacterium *Bacillus thuringiensis*) shows some hope of being practical and effective against budworm when sprayed in a solution of water.

Another factor influencing the quality of habitat is pollution of lakes, streams, and even the oceans with industrial wastes. The effects of pollution on fish populations are probably of greatest importance. Waterfowl and sea-birds are probably the next most vulnerable, particularly when the pollutant is oil. Heavy losses in sea-bird colonies off the coast of Newfoundland have been reported.

There are other factors in the development or progress of our civilization that have direct or indirect effects on wildlife habitat.

The development of hydroelectric power may have far-reaching effects on fish and other wildlife.

Petroleum and other mineral explorations have already caused significant destruction of wildlife habitat. . . . Thousands of new dwellings have sprung up during the postwar years and the urban sprawl is common in most, if not all, cities across Canada. Thus vast acreages of wildlife habitat are lost. . . .

It is also suggested that we may anticipate some new areas of conflict. In Canada we presently have two large regions barely touched by economic activity—the Pre-Cambrian Shield and the arctic tundra. For some species of wildlife these areas act as large preserves. In the event of accelerated economic activity in these vast regions, will they be able to withstand the destructiveness of exploitation of the forest, and intensive exploration and development of petroleum resources?

What of nuclear power? How will we dispose of our



radioactive wastes? In our streams? Will our trout streams be used to cool reactors?

The present situation may be summed up by saying that various forms of economic activity have created and are creating pressures on wildlife habitat. The result is an ever-decreasing area and quality of wildlife habitat. Activities responsible for this situation are industrial expansion, hydroelectric developments, pollution of water, abuse of forest stands, unwise forest management, insufficient control of fire, poor highway construction and maintenance practices; diversion of land to uses incompatible with wildlife, such as airports, roads, and thickly populated areas. Inadequate conservation action by governments and outdated public attitudes are also important contributing factors.

Action is required! These problems will not solve themselves to the benefit of the public. It is suggested that special attention must be given to environmental manipulation, based on the results of research, to make it more suitable for fish and for terrestrial forms.

Do we have the knowledge to take the necessary steps? The techniques of habitat appraisal appear adequate for present needs. For the future, we will be faced with the problem of producing more wildlife on less area. More research is required to determine specifically what components of habitat limit the distribution and abundance of the wildlife species concerned.

The most effective management of renewable resources is dependent upon the complete knowledge of the interrelationships between plants and animals and their environment. To assist in providing this information the preservation of nature reserves, where detailed ecological studies may be carried out without interference, is a necessity. Adequate provision must be made for setting aside, preserving, and studying all types of ecological communities found in Canada.

Is our administrative framework appropriate for the task of habitat preservation? In some provinces the jurisdiction over wildlife and land is under the same agency. In others, jurisdiction is divided and problems no doubt arise. The provincial game Acts, like the Migratory Birds Convention Act, are largely concerned with controls over the harvest of the resource. Although there are no definite legislative blocks that prevent reservation and acquisition of lands for wildlife habitat, there is a definite need for specific statutory provision for these purposes.

In the Atlantic Provinces, public interest in wildlife and benefits from wildlife resources can be substantially increased by the establishment, in each province, of sizable provincial parks in which a high proportion of the area is maintained as habitat suit-

able for native wildlife. It is likely that many other provinces could benefit from a similar program. To secure adequate habitat in an attempt to preserve certain species, why not a national program for reserving significant areas of habitat in the various ecological communities?

It must be realized that there will be a limit to the amount of land that may be set aside in public ownership for all resource interests, and we should use what is available to the fullest extent. Many recreation specialists, as well as some wildlife people, express the opinion that national and provincial parks in some area should be inviolate from other than passive use of wildlife. Angling is excepted, but in my opinion this exception cannot be justified. If the arguments for prohibiting other wildlife resource use are logical, I contend that in order to provide the greatest public benefit our policy respecting hunting and habitat manipulation in parks should be changed to permit maximum production of wildlife, both for passive recreation and hunting. Controlled hunting, namely control of numbers of hunters, methods, equipment, and area, could be a useful tool in preventing overpopulation and destruction of range. Thus, our scenic parks, which are usually in use during the summer months only, would provide recreation to yet another segment of the population at another time of year.

There have been suggestions that ARDA will be a great boon to the solution of many wildlife problems, but primarily those of preserving or developing habitat for wildlife production. Those of us who are interested in wildlife welcome such benefits from an agricultural program. I am aware of the proverb about criticism of gifts, but I do not believe that wildlife interests should be satisfied with the crumbs of other programs, be they agriculture, park development, or any other. We must strive for adequate recognition that will result in legislation which includes wildlife as an essential and important component of the resource base.

If habitat is to be maintained in conjunction with other land uses, close liaison is required between wildlife administrators and the administrators of other renewable resources, and that liaison must be reflected in operations. It is suggested that this can best be effected by means of an advisory group that would brief Cabinets on resource use policy and arbitrate interresource conflicts.

Planned programs for the use of land and water are basic to the maintenance of wildlife species. Specific environments must be maintained to perpetuate wildlife. Significant areas in public ownership must be set aside for public hunting, fishing, and associated recreational activities. In addition, some means to encourage production and harvest of wild-



life on private lands must be found if hunting and fishing are to persist as significant elements in the life of the average Canadian.

Present systems of financing wildlife research and management are inadequate in large measure. The basic program for maintenance of wildlife should be financed from general revenue. The program for production of wildlife surpluses should be supported by licence fees or tax on special users and businesses which benefit from exploitation of the resource. The federal government has both legislative and other interest in wildlife and should contribute significantly to research and management programs.

I have not found in the papers on wildlife a definite proposal respecting land use planning, although there are inferences that such a need exists. Such proposals do appear in papers presented to the forestry section of the Conference.

In the agricultural Background Papers a similar need is suggested for land use planning, but the definition includes only agricultural land.

In the water background material a similar need is suggested and a program similar to that presently in operation in Ontario is suggested as one way in which to provide a vehicle for completing land use studies and consequent recommendations for future wildlife management.

It would seem that a nation-wide program of land use planning with all resource interests represented will be essential before any new large scale programs of resource development occur. An inventory of the wildlife resources would then indicate what we have and greatly assist us in planning for what we need.

#### Discussant (Mr. CLARKE)

We are indebted to Mr. Harper for giving us a splendid résumé of the significance and importance of wildlife in Canada, a very good idea of the complexities of dealing with it, and a vision of what might be done to make the most of it in the future. I think the sort of mandate given in the preparation of the Background Papers, and the train of thought generated by those papers, could make us a little too visionary. Our old men have been asked to see visions and our young men to dream dreams, but we may be greatly mistaken in thinking that because Canadians have had a rich and spacious life in the past, we cannot in the future be conditioned to something that in the present we would consider impoverished.

I knew a man who grew up in the lunar landscape of an area devastated by smelter fumes, where no green thing ever grew, and the bare soil was scoured with every rain, where you could taste the air, and almost bite it and spit it out. To him it was home,

sweet home, and the richest and greenest landscapes you could offer had only a transitory allure. Last year, at Beltsville, Maryland, with a group at the North American Wildlife Conference, I saw an experimental herd of contented cows whose whole life was controlled and whose diet was weighed against milk production. There was a life of stanchions and cement courts—no bare ground, let alone pasture. Remembering the cows of my youth, I asked what had become of the beasts who had to roll on the fresh earth, where the slightest variation in the social ritual of herding and milking could reduce the flow of milk. The answer was that cows with likes and dislikes, jealousies, and above all a response to fresh earth and green pastures had been culled in the herd selection.

We have been deprived of species and some of our choicest landscapes have degenerated, but we are still sleek and comfortable, and if a few people had not spoken or written movingly about these things we should be none the wiser. Physical starvation we resist as we would the threat of physical death that is implicit in it, but we could die spiritually, as we would in a world devoid of the sparkling lights of nature, and still retain as much physical health as the experimental herd of cows. We could exist in a world without wildlife. Some people live quite well without freedom.

I think that the big point of this Conference is that we don't have to lose our wildlife. We can have our green pastures, and our earth to roll on. We have agreed that there exist wildlife values. What we have to do is get them recognized and get wildlife management applied to them. I suggest that wildlife values exist everywhere—even in the world of brick and mortar, as the peregrines of the Sun Life Building have demonstrated. Secondly, wildlife values are generally compatible with other uses and in any case should never be sacrificed needlessly. In some areas they outweigh other values. Thirdly, all planning must be multiple use planning. This must mean that there is a place for the wildlife technician in all planning, where values are weighed in the balance. And if he is the responsible person we have said he must be, then he must spend his life proclaiming the existence of wildlife values and "horning in" on land use planning. First you stake a claim—then you follow up on it, never taking anything for granted. I have been told on good authority of a designated wetland bird sanctuary that appears on a suburban plan and is marked "to be cleared, levelled, and filled with clean fill." This happened simply because the wildlife people involved had merely seen the designation onto the map, and then failed to follow up with the landscape engineers—a group whose outstanding characteristic is that they can leave nothing

alone. It has been brought home to me that you get for wildlife only what you claim now.

When land is put under planned management, the loss of wildlife values is as often an ill-advised choice

of procedures as it is a matter of poor economics. I suggest that few of our area administrations are well enough co-ordinated as yet to make a good job of multiple use planning.

## DISCUSSION

The Chairman presented a list of basic assumptions on which subsequent discussion was to be based. These were accepted with some discussion and a few amendments. The amended assumptions are listed at the beginning of this report.

The Chairman then called for discussion on the points raised by the lead-off speaker, and some other topics that were suggested by the leadership group.

1. It is essential that wildlife values be measured. There was discussion as to how this might be done in view of the fact that wildlife has aesthetic as well as economic value and aesthetic values are notoriously difficult to express in dollar terms. Several techniques are available in the literature and it was suggested that economists and the Dominion Bureau of Statistics might provide valuable assistance.

2. How can a greater harvest of wildlife be obtained on agricultural lands? It is inescapable that the landowner should be compensated in some way (not necessarily monetary) for maintaining or improving wildlife habitat on his land. There is also urgent need for improved co-ordination between administrative departments concerned with different aspects of land use.

3. Waterfowl problems, particularly in the Prairie Provinces, were thoroughly discussed. The greatest need is for adequate wetland habitat for waterfowl production, but suitable areas for overwintering, resting during migration, and for harvesting the resource are also required. There is a pressing need for an inventory of wetlands. There is also need for co-ordination between different land and water users on the Prairies to ensure that waterfowl values are recognized, and a need to reduce conflicts that exist in legislation dealing with wetlands.

4. There is a need for acquisition of land to be devoted primarily to wildlife production. Crown lands are still available for this purpose, but cannot fill the need entirely. Private lands will need to be acquired through purchase. This may require enabling legislation to permit provincial wildlife divisions to purchase, own, and manage lands.

5. Needs for "national park" and "wilderness" type areas should be reviewed by the appropriate au-

thority. This review should consider several points such as:

(a) Is the existing acreage sufficient and if so is it properly distributed in a geographical sense?

(b) By how much will the need be increased by 1980?

(c) Are there major physiographic areas of Canada not represented in the national parks program?

(d) How should large ungulates be managed—by the park staffs or by public hunting?

(e) Are there undesirable practices, such as haying, grazing, lumbering, at present within the national parks?

(f) Can some early successional stages be maintained within the parks in spite of the objective of complete fire protection?

(g) Is there a need for other types of federally controlled public access lands such as wilderness areas, national forests, national game refuges?

6. It was generally agreed that there is a need for small reserves in many ecotypes for scientific study. While the reservation is a provincial matter, liaison is required to ensure that all ecotypes are included. Some federal agency, such as the Canadian Wildlife Service, might provide the liaison. Universities and private bodies should co-operate in the selection of sites.

7. In view of the fact that human activity has created new ecological niches, both terrestrial and aquatic, the possibility of filling vacant niches by means of exotic species should be investigated. The investigation must be at the federal level because of the magnitude of the problem, the possibility of harmful introductions, and the mobility of many species of wildlife.

8. Non-consumptive enjoyment of wildlife can take place in cities and should receive consideration in urban planning. The Conservation Authorities in southern Ontario have set a noteworthy example.

9. The management of large carnivores was discussed in relation to the basic assumptions regarding extinction and variation in management between regions. Their management should be based on knowledge, not prejudice, and should have a definite

purpose in view, for example, game management, livestock protection, protection of human life.

10. It was recommended that federal and provincial governments review their policies with respect to the management of the large mammals of the northern regions. These mammals may be able to support a considerable recreation industry without detriment to domestic use as a source of food.

11. The qualitative and quantitative needs for the wildlife resources to 1980 were discussed. Anticipated densities of human populations already exist in parts of the U.S.A., and it was agreed that management methods now known can provide the required amount of wildlife, provided that lands for wildlife production are acquired and adequate funds are available. More sophisticated uses of the resource, such as fly

fishing and bow hunting should also be promoted.

12. Access is a considerable problem in securing proper harvest of wildlife resources in some areas. Consideration should be given to extending the "Roads to Resources" program to cover such cases. Too easy access, on the other hand, tends to dilute the quality of the resource; therefore, careful planning is necessary.

13. Concern was expressed over the increasing levels of biocides in wildlife species. In some cases the levels in the meat of wild game exceed the tolerances established for humans by food and drug authorities. The widespread use of biocides without prior knowledge of their effects on the ecosystem was deplored.



# Wildlife Workshop B

TUESDAY, October 24

## Maintaining effective utilization of wildlife.

- Chairman: C. D. FOWLE, Associate Professor of Biology, York University.
- Co-Chairman: CURT P. SMITH, Director of Fish and Wildlife, Alberta Department of Lands and Forests.
- Lead-Off Speaker: G. W. MALAHER, Director of Game, Manitoba Department of Mines and Natural Resources.
- Discussants: BRIAN C. CARTER, Wildlife Biologist, Fish and Wildlife Branch, New Brunswick Department of Lands and Mines.  
G. Ed. MEADE, Secretary-Manager, British Columbia Federation of Fish and Game Clubs.
- Rapporteurs: W. A. BENSON, Biologist, Canadian Wildlife Service.  
L. LEMIEUX, Biologist, Canadian Wildlife Service.

### Lead-off Speaker (Mr. MALAHER)

The function of your lead-off speaker is to present a general review of Background Papers as they relate to attaining effective utilization of wildlife, and to stress key problems requiring clarification by the Conference.

This might sound like an easy task, but I soon found to the contrary. My first approach was to summarize each paper separately, then try to emphasize the important points in each and finally, try to bring some order to important problems requiring discussion and clarification by the Conference. I found that to do so would consume far too much time. Finally, I came to the conclusion that, with certain exceptions, I should try to enunciate the problems and relate them back to what has been said in the Background Papers. Let me deal briefly with the exceptions first.

It is fitting that Dr. Clarke's paper is placed first in our wildlife section of published background material, for, in his own inimitable style and philosophical way, he sets the stage for the more specific subject matter in the papers that follow.

We must have and hold a wildlife philosophy. Clarke shows us that we have a wildlife philosophy, and how it has developed as an individual conscience. To me, his most important point is that, for the most part, it remains a private conscience, and we have failed as Canadians to develop a public conscience. I shall return to Dr. Clarke's paper from time to time in opening up our subject.

Alan Loughrey's discussion of the economics of the

fur industry differs quite radically from other papers with which we are concerned, in that he deals with a specific resource—fur. Fur also differs from our other wildlife resources in that it is an article of commerce subject to the usual laws of supply and demand, the ills of a luxury trade, fierce competition on world markets, world economic conditions, the vagaries of fashion, rising costs of production and manufacture, and, for wild furs particularly, decreasing raw fur prices.

Our primary raw fur industry—the harvesting of wild furs—developed in an unregulated and disorderly way for a very long period. Competition for fur and for trapping ground led to over-utilization and virtual extinction of some species, notably beaver. Some two decades ago quite vigorous steps were taken to correct this situation. Registration of trappers in a number of provinces gave security of tenure to professional trappers. Beaver preserves in Quebec, and muskrat rehabilitation areas in Manitoba provided special conservation areas for these species. Today, the problem is not one of over-harvest, but of harvesting the resource adequately.

The steps taken were management steps, good in themselves, but ignoring the need for basic research in support of management, and market research in support of our trappers.

The ranch fur industry has done a good job in promoting its product—today mostly mink. The trapper, primary producer of raw fur, has no organization for this purpose. If we are to maintain a livelihood for the primary producer, if we are to maintain

Canada's oldest industry, if we are in any full sense to utilize an abundant wild-fur resource, then official agencies *must* enter market research, product development, and quality and produce promotion.

Initial steps in promotion of Canadian furs have been taken by the federal government and in the formation of a Canadian Fur Council, with some assistance given by the provinces. At present levels, this promotion is like an annual shot in the arm to an invalid in urgent need of repeated medication. So far, the patient has managed to survive, but little more.

Loughrey's points are well taken. His closing recommendation for a continuing board or commission representing the entire industry, financed on an equitable basis, and responsible for both domestic and foreign market promotion should be given full discussion and consideration at this Conference.

Now I shall try under a series of headings to develop the problems which appear to hinder or preclude better utilization of our wildlife at this time.

The very geography of our country poses problems. The bulk of our human population and our industries is stretched within a narrow ribbon only about two hundred miles wide, but some three thousand miles long. There is division of responsibility, divided thinking, a widely differing approach to wildlife legislation, a lack of communication, overlapping, and therefore wasteful, effort in research.

Special problems lie too in the distinguishing characteristics of wildlife: mobility; harvest as a recreation—non-commercial except for remote populations and cropping of fur; the fact that wildlife is common property, but a product of the land, much of which is under private ownership.

Shall we first set down the headings within which problems of national significance may lie.

1. Land ownership and control.
2. Limitations in legislation, jurisdiction.
3. Administrative and management limitations.
4. Economics of wildlife.
5. The future for wildlife.

#### 1. *Land ownership and control*

Under this heading, and including the attitudes of those who control land and its uses, come many of our problems in utilization of wildlife. We are emerging from a pioneer concept of free hunting for all, to a realization that severe restriction of that privilege is being imposed by landowners. Munro points out that free hunting and fishing is a hollow right without entry to private land. Entry to private land is not a right, but a privilege. If we are to maintain that privilege two things must be done:

- (a) We must develop better personal hunting ethics.

- (b) We must, by some means, recompense the landowner who raises or feeds wildlife on his land.

Lewis raises this problem, but does not suggest any form of recompense.

Mair recommends it on two counts: (1) so that production may be at full capacity, and (2) to provide public hunting.

It is my own contention that the landowner must find profit in the wildlife crop if he is to maintain interest in the welfare and production of wildlife.

Fuller brings out the fact that many species have negative as well as positive values, and that many people see only the negative. Who can blame the farmer, who suffers not only from a horde of hunters, but from the depredations of the wildlife itself, if he sees only the negative values?

Cowan emphatically states that failure to solve the depredation problem through techniques that discourage damage without eliminating the wildlife species responsible will mean the eventual destruction of the wildlife. Leitch and Fuller say a solution must be found. If we are to have wildlife to utilize, this problem is paramount. Many game species are harvested almost entirely on private land.

In management of Crown land, wildlife management is, in many cases, the poor relation whose needs are considered only when all others have been taken care of. There are many good illustrations at hand.

- (a) *The game preserve* which is also a *forest reserve national* or *provincial park*. Cattle graze under forest regulations in competition with wildlife; timber is removed without thought of effects on wildlife. The attitude of the forester too frequently is, "Get rid of the game so that we can get on with the job." He does not recognize the biotic community.
- (b) *Crown lands or water management in departments separated from wildlife*. There is a lack of co-ordination aimed at multiple land or water use. Wildlife is given low by-product consideration only.
- (c) *Community pastures*. These large areas are established without reference to the wildlife administration. They are single purpose only and the game is tolerated only; often the public is excluded. These are public lands; they are essential to our dwindling wildlife habitat and are required as accessible hunting areas.
- (d) *Hydroelectric developments of major significance to wildlife* are undertaken without prior early notice of intent and with no statutory provision for co-ordination, or mitigation of adverse effects on wildlife.

We need legislation requiring that wildlife be considered in the planning stage and that mitigation is mandatory and chargeable to the projects.

Lewis sums it up as follows:

"The values of wildlife must be accorded appropriate and effective recognition. This will at times require adjustments by other interests, such as agriculture and forestry. Mutually helpful co-operation with other resource users must be sought and made effective. All users of public lands should be required to take wildlife and recreational value effectively into account."

Recognition of wildlife in multiple land use planning is an urgent topic for this Conference.

## 2. Limitations in legislation, jurisdiction

Munro deals at some length with the existing confusion in wildlife legislation; the lack of clear-cut jurisdiction, the inflexibility of legislation, the fact that most Acts are outdated, imply management by restriction and give no consideration to environment. He also points out that wildlife legislation is affected by laws respecting lands, forests, and waters. He stresses the clear-cut need for statutory recognition of the place of land in wildlife management.

Lewis suggests improvement in legislation by including only the broad base for organization and action, leaving the details as the responsibility of the Minister in charge; he quotes the Wild Life Act of Newfoundland as his example of good legislation.

While imperfections in legislation may not be the basic source of weaknesses in wildlife management, they may, through rigidity, hinder or preclude better utilization. Environmental conditions, including human conditions, are constantly changing, and fish and game regulations and administrative procedures must continually be altered and refined.

Jurisdiction is confused and confusing; utilization is affected.

"Resident" game is generally administered under a provincial game Act.

Fisheries, under the British North America Act, are the responsibility of the federal government, but some responsibility has been delegated to provinces.

Interprovincial shipment and general export of game is under the federal Game Export Act, but shipment of live animals is not covered. Introduction of exotic species has to be dealt with under provincial law.

Migratory birds, by virtue of a treaty, are regulated under federal Act, but property right in migratory birds remains vested in the provinces.

Generally speaking, the provinces administer these federal Acts. Their provisions are sometimes out of phase with provincial Acts and policy respecting enforcement.

Though "resident" game is vested in the province, the Prairie Provinces, at least, are hampered by provisions of *Indian Treaties* and terms of the Na-

tural Resources Agreement Acts in control of Indian hunting. The federal government appears more than reluctant to implement its power to legislate and regulate Indian taking of game, even in the long-term interests of the Indians themselves.

In one way or another all these legal tangles hinder or limit proper utilization of wildlife.

## 3. Administrative and management limitations

The evolution of administrative function and development of management in the wildlife field came about after long labor and growing pains. Conception came naturally, but pregnancy was long and labor protracted. The midwife was not too competent and, then too, the infant arrived somewhat late in the life of the nation. The doctor is taking over the growing but basically healthy infant from the midwife, but the parents still harbor much folklore and old superstition.

The belief that wildlife could thrive solely on a diet of legislation and enforcement persisted too long. In some quarters it still persists in the thinking that manipulation of the harvest is the answer to game management. A tool? Yes. But answer? No!

Management was slow in coming. It progressed just so far and then stumbled against the barrier of unknown facts.

Research has broken through the barrier, but much of it still remains to be cleared away. Only a few have squeezed through to the wider view beyond; the majority have yet to see it.

Symington, in his excellent presentation tells us that the next and most urgent procedure is to break down the rest of the barrier, using the tools of information and education to clear away the rubble. If nothing else comes out of this Conference, at least let us strive to convince those who hold the purse strings that information and education is a vital and urgent step to better utilization, requiring specialized training and knowledge of renewable resources.

In considering the topic of better utilization we have to take a look at all the component parts of the machinery for administration and management and see how they are, or can better be, welded together into an efficient whole. Let us make the assumption that we have a working model, but that it has weaknesses, is in need of refinement, and requires a few additional parts to make it function smoothly.

### (a) Research—a necessary component

Dymond gives the purpose of research as "to secure the facts necessary for management."

In our own particular field we must first recognize two main types of research. Cowan lists them as follows:

- (i) Studies or investigations toward improve-



ment in management techniques—management research;

(ii) Studies toward an increased understanding of a principle, or studies that discover new facts about a species or situation—basic research.

While Cowan grants that the exploratory phase of wildlife research is practically over, both he and Dymond state that present research effort is inadequate to meet existing needs and totally inadequate to meet the needs of the near future.

The responsibility for research in wildlife rests in three main areas, the federal government, provincial governments, and universities. A considerable amount of fisheries research is conducted under international agencies, mainly in regard to marine species. Waterfowl research also has important international aspects, particularly in regard to the annual co-operative waterfowl surveys and the continuing research conducted at Delta Waterfowl Research Station, Manitoba.

There is overlapping and therefore wasteful research resulting from a lack of communication and lack of any organization to collate research information and disseminate it. This is a national service which the federal government should be prepared to undertake. In the opinion of this speaker the federal government should also be prepared to widen its research activity through the Canadian Wildlife Service to include basic research on wildlife species of wide range and national significance. In summing up, I think it fair to say research has already enabled us to know better, yet the findings of research often are not applied. If we know better why don't we do better? Would you agree with the following answer? Politics, lack of public relations through lack of information and education—and therefore failure to bring the public along with us—may be the reasons we don't do better.

#### (b) *Management*

The need for specialization in the management of our renewable resources is increasing as the pressure on those resources is increasing. Wildlife is no exception to this. A wildlife management and administrative organization is basically a *field* organization supported and controlled by a central office. The measure of the organization lies mainly in the effectiveness of that field organization. Lewis put the need this way: a trained field staff is specially prepared to enforce the law, engage in public relations work, and assist the biologist in research and management work.

Munro devotes considerable space to the importance of organization. He shows that there is considerable variation across the country both in wildlife organizations themselves and in the departments of government to which they are attached. He gives detail

of two main types of organization and brings out some of the advantages and disadvantages of each.

(i) A line organization controlled by a central office, charged only with fish and game administration. There may be a regional breakdown within this organization.

(ii) A multi-resource field organization performing a variety of functions, among which fish and game represent only one, with senior game officials serving, in effect, as staff officers at the central office.

In summary he has this to say regarding the two types:

Field work in game calls for specialists, persons suited by aptitude and training for their work.

Field work in game should be able to compete effectively with the administrative demands of other resources for manpower and equipment.

There are benefits from *close association* between fish and wildlife administration and the administration of other renewable resources, particularly at the regional and central level. (Note that the words used are "close association" and not "integration.")

Integration is desirable up to a point, but should not extend to a point hampering senior game officials in the exercise of effective field supervision.

A primary disadvantage of multi-use departments from the fish and game point of view is that some appear to be dominated by such other resources as are of predominant importance from the economic point of view.

A line organization of specialist employees responsible to a Minister has many advantages, yet there is obviously a requirement for close co-ordination with all other aspects of land and water use.

The importance of a well-trained specialist enforcement staff cannot be overemphasized. The work of the game warden is unique.

Munro also makes a specific recommendation for a more thorough study of organization, particularly to develop criteria for assessment of wildlife institutions, and states that until this is done, attempts to render management more effective will have to be based on crude, empirical grounds. I commend this recommendation for your consideration.

#### (c) *Enforcement*

This is only one phase of administration and management and not the single all-important function it was once felt to be. It is, however, a necessary function which must not be underrated. It will continue to be necessary unless there is a radical change in individual ethics. It calls for men of special training and aptitude, dedicated to their work, able and willing to do the job without thought of daily working hours.

(d) *Public relations—information and education*

I have already stressed the need for better public relations in earlier remarks. No fish and wildlife organization can function properly unless the public knows and understands what it is trying to do and why. Many of the stumbling blocks to better utilization are traceable to lack of information and education work. I class the present lack of trained information and education staffs working as integral parts of natural resources departments to be the biggest hindrance to general progress and better utilization that there is today. Information and education involves in-service work as well as general public relations. Symington's paper should be studied in detail by everyone; out of it specific recommendations should arise.

(e) *Planning*

Lack of policy and planning in advance of public action or demand has hindered orderly development and proper utilization in many resource fields. It has led to segments of the public, or even individuals, dictating what the policy or utilization shall be. There is urgent need of integrated planning, not only in relation to land use, but in regard to all resource programs and projects. Few programs affect only one resource. Plans formulated by a single resource agency should be scrutinized, correlated, and coordinated by an independent planning authority, with a view to multiple resource use. Those involved in multiple resource planning should be divorced from administrative duty.

Successful planning, particularly long-term planning, is intimately tied to financing.

(f) *Financing*

The system of financing through annual appropriation, without commitment for longer-term expenditure related to longer-term planning, leads to early abandonment of many planned improvements. Administrators are asked for five-year estimates of revenue and expenditure. New or increasing expenditure items are fully explained and plans outlined. Treasury accept these estimates without comment and presumably incorporates them in their planning, but when annual estimate time comes those plans and expenditures go out through the window. Gone is the planning, the time is wasted; five-year estimates no longer have validity. Surely there should be provision for scrutiny and acceptance or otherwise of these longer-term plans when first submitted and for financial commitment to them if accepted.

Mair is of the opinion that the present system of financing wildlife management plans is quite inadequate.

The federal government alone spends \$20 million for commercial fisheries. All Canadian federal and

provincial agencies together spend only about \$10 million on sport fishing and wildlife. Mair also refers to the common practice of striking a rough balance between revenue and expenditure. This practice fails completely to recognize the actual contribution of the resource to the economy and places the burden almost entirely on special users.

Mair proposes as policy that:

(i) The general interests in wildlife should be maintained through programs financed from general revenues, including land manipulation and protection, regulation and research basic to these purposes.

(ii) Special users should be taxed (licences, etc.) to provide harvestable surpluses from which they benefit directly. These revenues should be directed to the purposes of fish and wildlife.

(iii) The federal government, with important national interest as well as direct legislative responsibilities, should contribute to the support of wildlife management, particularly through financing and initiation of research.

(iv) Operation in the United States of the Pittman-Robertson Act, the Dingell-Johnson Act, and Duck Stamp Act should be studied for possible application of similar procedures in financing fish and wildlife projects in Canada.

It seems there are major deficiencies under all the headings I have used in discussing administration and management: research, organization for management, enforcement, public relations, planning and financing.

4. *Economics of wildlife*

Dr. Clarke speaks of the significance of wildlife in our economy. He is bold enough to give figures, based on the skimpy evidence available, showing an annual hunter expenditure for Canada of \$105 million, based on a per hunter expenditure of \$70 for 1.5 million hunters. This "guestimate" is supported by figures from British Columbia and, I might add, by unpublished figures arrived at in Manitoba a year ago. These independent figures are remarkably similar and imply some validity to the "guestimates." Wildlife is obviously big business. Like Dr. Clarke I do not hold that money can measure the real value of our wildlife, but money talks fastest and until we have "sold" the other and presently more elusive values we must stress the big business aspect of the resource to gain recognition of its importance and gain funds for its continuance.

I submit that there is urgent need for a Canada-wide survey of hunting and fishing, similar to the ones conducted in the United States. This is the quickest way of dispelling the lethargic attitude to



wildlife evident in many official circles and much of the public mind.

##### 5. *The future for wildlife*

Technology is already affecting wildlife utilization to a major degree (e.g. use of aircraft in hunting and fishing, use of plant and animal pesticides) and will do so increasingly in the future. Human population is expected to double on this continent before the end of this century (Clarke). Participation in hunting and fishing is increasing at twice the rate of human population increase. Significant changes in landowner attitudes are taking place. The face of the land is changing, and game habitat is decreasing.

Mair states that we shall find ourselves in a completely untenable position unless major decisions on policy are made in the next five years and programs implemented within ten years. We have to decide now what we want in wildlife and from wildlife.

Do we want to maintain our Canadian philosophy and tradition respecting wildlife and its utilization? Can we support it in our growing economy or do parts of it belong only in a pioneer economy? If we want it badly enough we can still maintain it, though modification will be necessary. The alternative is a return to the Old World concept of management and utilization.

In summary, I would recapitulate what I believe to be some of the most important recommendations contained in the Background Papers. These are not in order of importance, but in order of appearance in the text.

1. Establish a board or commission responsible for the domestic and foreign promotion of Canadian furs on a vigorous and continuing basis.
2. Determine ways and means of compensating landowners on whose property significant wildlife is produced.
3. Achieve proper recognition of wildlife values in the administration of all Crown-owned lands, and develop multiple use planning in co-operation with agriculture, forestry, water resources and other agencies.
4. Scrutinize and, where possible, amend legislation and clarify jurisdiction respecting wildlife, with the objective of simplifying both.
5. Find a solution to the problem of unregulated utilization of wildlife by Indians.
6. Press for better understanding of the need for research under adequate financing.
7. Stress the urgent necessity of adequate public relations in the whole resources field. The establishment of information and education divisions within the same administration as wildlife.
8. Recommend a Wildlife Act, Canada, under which the federal government can participate to a greater

extent in wildlife research and management, including the initiation, conduct, correlation, and dissemination of research and its findings and the provision of funds for these purposes.

9. Study existing organizations of wildlife agencies; develop criteria on which they may be judged and recommend efficient organization.

10. Conduct a comprehensive national survey of the economics of hunting and sport fishing in Canada.

11. Review and restate our wildlife philosophy.

##### Discussant (Mr. MEADE)

Although it is the subject of another workshop, any discussion of utilization of wildlife will have to include discussion of habitat, since utilization is dependent upon adequate land and water, and these same lands and waters are wildlife habitat. Any single-purpose alienation of land automatically eliminates an area for both production and utilization of wildlife.

The Background Papers on agriculture, prepared for the Conference, state that Canadian farms will be fewer and larger in the future. If this prediction is related to present-day statistics on hunters and fishermen (in the United States an 11 per cent increase in population resulted in a 22 per cent increase in anglers, and a 24 per cent increase in hunters in 1955-1960), it would seem that there may be fewer landowners with whom to negotiate for recreational areas for more people. Is this a sufficient basis for future planning with regard to utilization on private lands, or will the Agricultural Rehabilitation and Development Act be a means of setting aside marginal agricultural land for wildlife utilization?

##### 1. *Fisheries*

I note that sports fisheries have been neglected in the wildlife Background Papers. I suggest that we consider whether or not we should continue to expand the "put-and-take" type of fishing and let river and lake management be on a prime-use basis, or whether we should provide artificial fishing for a portion of the population and a rehabilitation and stocking program which eventually will allow natural production to take over from artificial methods. Perhaps we should consider if there is room for water leases in all parts of Canada, or whether we should endeavor to eliminate those in existence and provide public water for all. I think, too, we should consider the merits of restricted fly-fishing waters where no other form of fishing is permitted. Also, we should give earnest consideration to whether or not our coarse fish are being properly exploited. I bring this up because I am convinced we are a nation of fishermen with a minority of



anglers, and that angling is the utilization we are considering, not the harvesting of fish, although the two are synonymous.

May I remind you that the bass fisherman of Ontario is happy with his fish, yet we are a trout-salmon group on the Atlantic and the Pacific coasts. So I raise the question: Do we base our sport on edibility of the catch?

Mr. Malaher has shown concern for the fur industry's future. What of the amateur trapper? Is this not a yet-to-be-exploited portion of this resource?

## 2. Access

Access is undoubtedly the key to most of our utilization problems. May I suggest you give thought to the following:

That we face an impossible task if we consider legislating access to privately held lands. These lands can only become a part of our utilization procedure through negotiation with the landowner.

That the present method of setting aside lands by Crown reserve may be good enough for today, but these reserves carry no guarantee for the future. Ownership by the Crown with jurisdiction and management under the appropriate department, the provincial game administration, would be a more practical method.

Municipal governments could, in many areas, provide habitat and hunting grounds, thereby taking pressure off public lands.

At this stage in Canada's development, land acquisition is more important than land management. We must have the land before we can manage it. Until we have land and management procedures established we cannot expect full utilization of our game crops. Naturally, this statement applies also to water.

The theory of equitable distribution of game will not stand up under modern practice. I state this with the example that it is not an equitable method of distribution that waterfowl bag limits, say, in British Columbia, are based on Alberta populations and conditions. I feel, too, that an inequitable situation would be desirable in remote areas where "bonus" limits could be utilization tools.

Fish and wildlife are users of water and land and must be considered to be such by all other users. I think that we shall require that this be established as a basic concept of wildlife utilization during the Conference because as soon as it is an accepted fact across Canada, it can lead to new forms of land leases, grazing permits, tree-farm licences, etc.

## 3. Cost-benefit

There is undoubtedly a great need for a proper survey of the values of Canadian wildlife and its

utilization. The new expression of the economist, "cost-benefit," covers the situation adequately. Let me give you an example in British Columbia: A small sandbar on the lower Fraser River is earning a \$4 thousand annual income for a farmer who provides to fishermen facilities for parking, etc. And yet, in that same area the government of British Columbia de-gazetted a road allowance which could have provided free access to a similar stretch of land and water. On the matter of cost-benefit, some base must be established to measure values in wildlife utilization and public use so that we are no longer talking abstractly when we speak of values attached to our wildlife.

I think we should, if time permits, examine some of our provincial licensing structures. In this regard, I can only say that, in my mind, our licensing structures are not in the same world as our tourist promotion.

## 4. Information and education

Undoubtedly, information and education will become a portion of this discussion. Here, in my estimation, is the key to many of our problems. Management of our wildlife resource must lie with experts in management. Therefore, experts in information and education must expound the virtues of management.

I think the expert in information and education is as essential as the biologist. His activities are more effective than that of the enforcement officer. He provides the healthy atmosphere for progressive management practices. Mr. Malaher spoke of better personal hunting ethics. How does the hunter know, without an intelligent information and education program, whether he is an ethical hunter or not? Here are some examples of basic information and education in my own province: The use of hunter liability insurance, which guarantees a hunter financial backing when he makes a gross error in judgment and causes injury or damage to person or property. We have a posting system on lands in British Columbia which insists that anyone going on a farmer's posted land ask permission first. It isn't the point of the permission that's so vital, it's the acknowledgment that you must ask. I think the drawing for permits to hunt certain species of big game in parts of Canada and the United States is good information and education.

## 5. Predators

I have a feeling that we would do well to discuss the upgrading of certain species. I know that parts of Canada have put the black bear on a better footing and in so doing have accomplished a better job of utilization. I think that we are decadent to con-

sider the cropping of crows and magpies a good way to manage duck populations. If there is a biological basis for this I would like to know about it, because I think it smacks of the old "kill the predators and you've got yourself an assured game crop" theory which, to my mind, is out of date. I don't know why, but British Columbians still look upon the cougar as a predator, whereas if he'd been called a mountain lion from the start, he might now have been a sought-after trophy. The semi-fiction magazines from our cousins to the south point him up as a killer, where he might be something of a national hero. As an example, I learned quite recently that non-resident hunters in northern British Columbia were wolf hunting for trophies. This, to me, is a healthy sign.

Perhaps research is not a subject for this Work-

shop, but I would like to remind you that one of the greatest enemies to proper research at the provincial level is the poverty of the provincial game administrations. There is undoubtedly room for a national research program through wildlife institutes at the university level, away from this apparent poverty in the provinces. Without research we cannot expect too much in the way of management, and without good management we cannot expect full utilization, so I think this point should be considered.

I know that Mr. Butler, the British Columbia Game Director, is going to have a lot to say about pollution, so I would merely commend it to you as a topic for discussion, with the added note that if Mr. Butler doesn't bring up the point of insecticides and herbicides, you can expect to find me on my feet later.

## DISCUSSION

In a wide-ranging discussion, tentative agreement was reached on a number of conclusions and recommendations concerning the maintenance of effective utilization of wildlife. Final action on these questions,

however, was held over until Friday, and the substance of Tuesday's discussion is embodied in Friday's report.

## JOINT MEETING

### WILDLIFE WORKSHOPS A AND B

Friday, October 27

Wildlife Workshops A and B met jointly and approved the following recommendations for the Steering Committee.

#### 1. *Appraisal*

There is an urgent need to develop a definitive analysis of the socio-economic significance of the wildlife resource as it is related to recreation and other uses, consumptive and non-consumptive.

It is urged that the Dominion Bureau of Statistics in consultation with appropriate provincial and federal wildlife authorities proceed at once to develop a definitive appraisal of the socio-economic significance of the wildlife resource as it is related to recreation and other uses, consumptive and non-consumptive.

#### 2. *Land for production and use*

The continuing decrease in the amount and quality of land and water available to wildlife has resulted in urgent problems of supply and utilization of the resource. It is therefore strongly recommended that:

(a) All governments of Canada recognize the

urgency for now acquiring or designating land and water areas for the primary purposes of wildlife management and maintenance of access for public use and enjoyment. Such land must be set aside while it is still available and placed under the control of the appropriate department of government interested in the management of the wildlife resource.

(b) Inasmuch as the waterfowl resource is threatened by the continuing destruction of its natural wetland habitat, there is urgency for the acquisition, designation and management of such waterfowl habitats.

(c) A positive program for the encouragement of the production of wildlife on private lands be undertaken by the appropriate agencies in co-operation with the landowners.

(d) The wildlife values of Crown lands be recognized as a land use value and developed, and that where leases or other forms of alienation are initiated or renewed, provision for wildlife management and access to such resource be provided

wherever they would not be inimical to the primary purpose.

(e) A review be made of the present and the future Canadian needs with respect to parks, wilderness areas, and wildlife refuges, as well as ecological reserves designed primarily for scientific study. This should include a review of existing park areas, their suitability, distribution, and policy.

(f) Federal and provincial governments review their policies with respect to the management of the large mammals and other wildlife resources of the northern regions, with regard to future demands upon those resources.

### 3. Economics of the fur industry

It is recommended that a board or commission be established which is truly representative of the fur industry of Canada, responsible for domestic and foreign market research, product development and quality, and product promotion on a vigorous continuing basis.

### 4. Legislation

It is recommended that:

(a) A Canada Wildlife Act, comparable to the Canada Forestry Act, be enacted, under which the Canadian government can most effectively participate in the closest co-operation with provincial governments in wildlife research and management, including the initiation, conduct, correlation and dissemination of research and its findings, and the provision of funds for these purposes.

(b) Where governmental co-ordination of complementary legislation is a requisite for wildlife management, a very close liaison be in effect between the provinces concerned and the federal government, for example the control of aircraft entering, leaving, and operating over areas frequented by wildlife (Fisheries Act; Indian Act).

(c) All legislation dealing with any or all natural resource use, federally or provincially, have adequate provision(s) recognizing wildlife as a natural resource.

(d) Each government in Canada provide mechanisms for co-ordination of the activities of all government departments and agencies concerned with resource management.

### 5. Pollution

(a) There is actual and potential damage to the wildlife resource arising from the use of some pesticides, herbicides, and various other chemicals. It is urged that the problem be critically evaluated by all governments on a continuing basis. It is further urged that the use of such agents without prior

knowledge of their effects on the ecosystem be discouraged. There is need for increased facilities for the detection and assay of chemical residues and the assessment of their effects on wildlife species.

(b) The wildlife section of the Conference endorses the principles expressed in the pollution recommendation presented by the water section and reported in Journal 4, page 13, and recommends that the federal and provincial governments study, as a matter of urgency, the impact of pollution in its many forms

- (i) Throughout Canada;
- (ii) In the coastal waters;
- (iii) In extra-territorial waters;

and take appropriate action to control such pollution.

### 6. Research

To the end that research to do with the wildlife resource may be strengthened and reorganized, it is recommended that:

(a) There be increased support for postgraduate training and for research at universities.

(b) The support for research be strengthened and encouraged in the departments of government, and in private, professional, and industrial organizations.

(c) Co-operative research arrangements between governments and universities be encouraged where such are appropriate.

(d) There be more adequate opportunity for co-ordination and co-operation in interdisciplinary research as well as in individual sectors.

(e) Financial support of the National Research Council be increased and the area of its interest in research into natural sciences contributing to the renewable resources be expanded; or alternatively, a research division of a Renewable Resources Council be established to serve a similar purpose in part.

### 7. Information and education

(a) Because implementation of policies that are indicated by wildlife research findings is sometimes hindered by lack of public understanding, and since appreciation of wildlife in all forms should be encouraged, it is recommended that:

(i) Information and education programs with regard to the wildlife resource be intensified in schools and other agencies;

(ii) Because there is an urgent need for more effective distribution of the results of research completed, all governments should be encouraged to provide the opportunity for the publication, or dissemination by other means, of research information;



(iii) Because many Canadian wildlife problems have relation to those of other countries and continents, international co-operation (especially in research and information) be encouraged wherever possible.

#### 8. *Conference*

Recognizing the value of the reviews, discussions, and planning made possible through this Conference,

this Workshop wishes to congratulate those responsible for its conception, planning, and conduct and urges that similar or related opportunities be arranged periodically.

#### 9. *Appreciation*

The Wildlife Workshops wish to congratulate the Conference Secretariat for the effectiveness of its preparation for the deliberations of the Conference.

# WATER

Tuesday, October 24 and

Friday, October 27, 1961

"The BNA Act imposed a division of jurisdiction in water management that fails to recognize the interrelationship between various water uses and water users and so has acted as a major inhibition to the adoption of a comprehensive approach. The tendency at the federal level has been to concentrate on those aspects of water use mentioned and specifically assigned to the federal authority in the BNA Act—namely navigation and fisheries—and to give less direct attention to other aspects. The problem is further complicated in cases where a water use under federal jurisdiction conflicts with a use under provincial jurisdiction. In the absence of agreement and co-operation between the two levels, possibilities of comprehensive development are precluded."

*T. M. Patterson, "Administrative Framework for Water Management," Resources for Tomorrow, Vol. 1, p. 245.*

# *Introduction*

During the planning for the water section of the "Resources for Tomorrow" Conference it was decided that discussions leading to better management and development of water resources would best be carried on by groups dealing with multi-purpose development, benefit-cost analysis and pollution. Accordingly, three discussion groups were arranged, as follows:

Workshop A—Organizing for multi-purpose development in river basins.

Workshop B—Benefit-cost analysis.

Workshop C—Achieving effective pollution control.

The discussions in Workshop A showed quite clearly that nearly every authority concerned with water use, while agreeing with the principle of multi-purpose development, is extremely jealous of protecting its own privileges regarding water use. If the privileges of an entity are not challenged or affected in any way, then multi-purpose development is accepted by that entity. In river basins lying wholly within one province the conflict between water uses is one of the barriers to multi-purpose development. In the case of rivers which cross provincial boundaries the problem is further complicated, as the ownership of the water is divided between the provinces concerned.

Of the various problems facing the decision-maker today, that of evaluating the merits of alternative projects competing for development is one which urgently requires a solution. In the past it has usually been necessary to demonstrate only the technical and financial feasibility of a project. Typically, the only questions a decision-maker would have to ask would be: "Is the project technically sound? Can sufficient funds be obtained for its construction and operation? Will the revenues be sufficient to

cover the costs?" Today, however, many other factors have to be taken into account. Not only is the number of projects competing for development rapidly increasing, but the effects of many of them are tending to be much broader. Moreover, the number of conflicts between resources and between resource uses continues to multiply. Procedures are required, therefore, which can help determine the best means of providing given services, the best use of given resources, and the best use of investment funds.

Benefit-cost analysis is a technique which can be used to evaluate the over-all effects of resource development projects. As a technique, it is not new: it has been in use in the United States and elsewhere for many years. However, apart from a few notable cases such as the Manitoba Royal Commission study on flood cost-benefit, little use of the technique has been made in Canada to date.

Recognizing the importance of the problem of project evaluation, the Advisory Committee on Water of the "Resources for Tomorrow" Conference suggested that this matter be highlighted at the Conference. To facilitate the discussions, the Secretariat requested a group of four authors—Mr. W. R. D. Sewell, Dr. A. D. Scott, Dr. John Davis and Mr. D. W. Ross—to prepare a draft "Benefit-Cost Analysis Handbook." This draft was prepared and circulated to participants in Water Workshop B in advance of the Conference.

After discussion in the Workshop it was agreed that a final edition, incorporating the points raised in the discussion, should be published.

The discussions in Workshop C showed that the problem of pollution has been treated too lightly in many areas, and that the public very often is not aware of the consequences of pollution. Stronger legislation is required, as well as a program of education directed toward the general public.



# Water Workshop A

TUESDAY, October 24

## Organizing for multi-purpose development in river basins.

- Chairman: C. W. NASH, Director of Load Development, British Columbia Power Commission.
- Co-Chairman: F. L. GRINDLEY, Director of Water Resources, Alberta Department of Agriculture.
- Lead-Off Speaker: IRVING K. FOX, Vice President, Resources for the Future, Inc., Washington, D.C.
- Panel: Nelson River:  
D. CASS-BEGGS, General Manager, Saskatchewan Power Corporation.
- Saint John River:  
R. E. TWEEDDALE, General Manager, The New Brunswick Electric Power Commission.
- Ottawa River:  
YVON DEGUISE, Assistant Chief Engineer, Quebec Hydro.
- Rapporteurs: M. SLIVITSKY, Director of Hydrology, Quebec Department of Natural Resources.
- IAN S. MCARTHUR, Chairman, Fisheries Prices Support Board, Canada Department of Fisheries.

### Lead-Off Speaker (Mr. Fox)

(An outline of the basic issues in organization for river basin development. The views expressed are those of the author and not necessarily of his organization.)

In developing my paper for today's program, it appeared to me that the lead-off speaker could contribute most to the discussion by identifying and clarifying the more important basic issues that must be resolved in arriving at an effective pattern of organization for multiple-purpose river basin development. This is the objective of my presentation and I hope it will provide a suitable background for today's program. Appropriate solutions to the issues posed are not suggested. It is my hope that the subsequent presentations and the discussion that follows will indicate the answers we seek.

By the term "river basin development," I refer to planning, the installation of measures for regulating and utilizing water flows, the operation of water resources facilities, and the marketing of water

services. I do not include data collection, research, or the regulation of private activities in the water resources field. They, too, pose important problems but I do not feel I can cover them adequately while at the same time considering the activities directly involved in the production and marketing of services from water.

By the term "organization" I refer to:

- (a) The distribution of responsibilities and functions
  - (i) Between public and private institutions,
  - (ii) Among levels of government,
  - (iii) Among agencies at each level of government, and
- (b) The geographic area in which these functions and responsibilities are discharged by the level or agency to whom they are assigned.

My presentation is based on the assumption that all levels of government—federal, provincial and local—and private institutions are involved in river

basin development as I have defined the term. Thus a major task of organization is to define and establish effective intergovernmental and public-private relationships.

With the foregoing considerations in mind, I have sought to identify ten issues that appear to be of fundamental importance in arriving at an effective pattern of organization for multi-purpose river basin development, and to suggest some of their ramifications.

1. *What "purposes" are to be included in the concept of multi-purpose river basin development?*

In both the United States and Canada, river basin development began on a single-purpose basis. Historically, navigation or irrigation or water power have been the first purposes. In this process of adding purposes to the objectives of the river basin agencies, the original purposes tend to maintain a status superior to that of purposes added later. But this disparity is disappearing. Even recreation is now considered a primary purpose of river basin development in the United States. Two problems remain. One concerns the relation of recreation to storage, and the other concerns the use of streams for waste disposal purposes.

Although recreation is now generally regarded as a major purpose of river basin development, the idea that this purpose sometimes may be served best through a minimum of reservoir construction is not so well accepted. In other words, engineers seem reluctant to recognize that although recreation opportunities may be provided by a lake, the net increase in recreation values stemming from reservoir development may be negative because the reservoir destroys other scenic and recreation values.

In spite of the fact that man has always used streams for waste disposal purposes, we seem reluctant to recognize that this is a legitimate objective of river basin development. It is self-evident that waste disposal may conflict in a serious way with other water uses. But it is also evident that the way a river is managed can have an important influence on waste disposal costs.

Recreation and waste disposal are both legitimate objectives of river basin development programs. The practical problem is one of making these concepts operable. How do we, in fact, incorporate recreation and waste disposal into the river basin development program framework so that they receive the consideration they merit?

2. *What is to be the geographic unit for planning, development and management of water resources?*

Today the generally accepted answer to that question is that the river basin drainage area is an ap-

propriate geographic unit. However, this simple answer fails to meet two important elements of the problem.

First, in the case of major river systems (such as the Nelson or, in the United States, the Mississippi) is the entire basin the planning and operating unit, or is the basin subdivided into major tributary basins and main-stem sections? This is a practical problem in a number of areas. If the total system is proposed as the planning unit, one might ask whether any single organization can comprehend and deal effectively with the many elements involved in the entire basin. On the other hand, if the basin is subdivided, how is co-ordination among the planning units to be achieved?

A second element of this question relates to the inclusion or exclusion of land treatment measures and small watersheds in the major river basin planning and operating unit. Certainly land treatment and small reservoirs with a capacity of a few acre-feet to several hundred acre-feet influence sediment flows, water yield and peak discharges. Nevertheless, in the United States, with the exception of the Tennessee Valley, we have placed responsibility for land treatment and small watershed development in a separate agency instead of in the agency responsible for the development and management of major rivers.

The relevant factor in deciding upon the geographic unit for planning, development and management is the practical significance of the physical relationship between the upstream area and the major tributary basin, and between the major tributary basin and the over-all river system. The significance of these relationships will vary from case to case, depending upon the stage of economic development of the basin as well as upon climatic and geographic factors. In some instances the development of a major tributary will have sufficient influence upon the benefits to be realized downstream, to require that main-stem planning, development and management be thoroughly integrated with the planning, development and management of major tributaries. Yet, it is conceivable that tributary development will not have sufficient downstream influence to warrant such integration.

3. *What should be the role of private institutions in river basin development and what should be their relationship to public agencies?*

In both Canada and the United States, private institutions engage in river basin development—to produce power, to irrigate land, and to facilitate navigation, particularly for logging. The role of private institutions in this field has become a very controversial issue in some areas. Those who support a private role contend that private institutions are

motivated to function more efficiently than public agencies, and that our whole economic system is based on this premise. Those who oppose participation by private institutions argue that since water development enterprises tend to be monopolistic and therefore are not subject to competitive forces, they cannot function effectively in the public interest. Also, since many of the benefits of a project are non-marketable, the private organization is not motivated to optimize these benefits. Finally, a given project may have far-reaching effects beyond the project, but the private agency has no interest in taking into account such external influences.

The significant point in this argument is that if private institutions are to participate in river basin development, there must be specialized arrangements between the government and private agencies to meet the foregoing problems. In theory, at least, this should be possible. As a practical matter, the relationships may be so complex as to be inoperable.

4. *What is to be the role of the federal government and what is to be the role of the provincial governments in river basin development?*

Apart from the constitutional issue (which I am not qualified to discuss), the federal government might establish water development agencies with responsibility for a full range of water development activities. These might be nation-wide agencies or regional river basin agencies like T.V.A. in the United States. Another possibility is for the federal government to stimulate river basin development through a system of grants and loans to provincial agencies to be invested in accordance with federal policy. A third possibility is that the provinces and the federal government might collaborate in establishing and financing river basin development agencies and programs.

My impression is that this is a delicate issue in Canada. A major argument in favor of expanding the federal role is the ability of the federal government to raise capital investment funds somewhat more easily and at lower interest rates than the provinces. On the other hand, centralization of administrative responsibility can lead to frustrations and inefficiency. If change is contemplated, both points must be weighed.

Involved in this issue is the question of whether Canada should have one or more centralized water development design laboratories. Indications are that it is more economical to centralize the provision of this kind of service than to maintain numerous small installations. If Canada expands its river development program, should the design laboratories be maintained by the federal government or as a joint venture of the provinces?

5. *How is the development of interprovincial river basins to be administered?*

This, of course, is related to the previous questions. In contrast with the United States, where practically all major river basins transcend state boundaries, Canada has fewer interprovincial streams. However, the interprovincial streams appear to be important ones. Three alternative approaches to this problem might be considered. One possibility is to follow the pattern most common in the United States, namely, to have a federal agency or agencies assume primary responsibility for the entire basin. A second possibility is for the provinces involved to establish jointly an interprovincial agency responsible for the entire basin under a special charter. A third approach is for each province to establish an agency to be responsible for the segment of the basin within the province.

Possibly no one of these alternatives should apply in all cases. Each has advantages and disadvantages. A federal agency raises the question of what part the federal government will play in river basin development. If interprovincial basin-wide agencies are to be established, can agreements permitting effective action be negotiated when needed? If each province develops and manages its own segment of the basin, will it be practicable to realize the maximum potential benefits from the basin as a whole? These questions merit careful examination.

6. *For each river basin unit, however such units may be defined, will public responsibility for planning, development, and management for all purposes be unified in a single agency or will these responsibilities be shared by two or more agencies?*

As you are well aware, the United States has a number of agencies—both state and federal—concerned with river basin planning development and management in each river basin area. Even the Tennessee Valley Authority shares some responsibilities with other federal and state agencies. You now have a number of single-purpose or dual-purpose agencies. Will you convert these agencies into multiple-purpose organizations with full responsibility for planning, development and management, or will you add other agencies to emphasize other purposes?

The existence of several agencies with responsibility for some aspect of river basin planning, development and management of a given basin doesn't appear efficient. Critics of U.S. water development institutions contend that the existence of several water development agencies has resulted in costly interagency competition for public funds, expensive duplication of staffs and facilities, and cumbersome and time-consuming co-ordination efforts. It is argued



by supporters of existing agencies that this approach results in a healthy competition among government agencies, with the result that alternative plans are aired more fully than they might otherwise be and greater efficiency is achieved.

7. *Should planning, construction, operation and marketing of services be united in the river basin agency, or should they be divided with one or more processes performed by one agency and other processes performed by another agency?*

Again, I will turn to the United States as an example of how this matter has been approached. Generally speaking, planning, development, management and marketing of services have been unified in a single agency. There are, however, two major exceptions. For one thing, several planning studies have been undertaken through interagency committees or interagency commissions. In these cases the responsibilities of the committee or commission ended with the completion of the planning report. Also, the marketing of services has been separated from the other three processes in one important instance. In the case of hydroelectric power, the Department of the Interior markets the power from dams planned, constructed and operated by the Corps of Engineers.

How important is it for a single agency to be responsible for the total effort? Are there advantages to separating some of the processes from one another? If they are to be separated, what should be the division?

8. *How is the river basin program to be co-ordinated with related public and private activities at the provincial and local level?*

This is a perplexing problem. The river basin agency may be concerned with the production of power, but does this mean that it should be responsible for the production and marketing of all electric power in the region? If it is not, how is the production and marketing of hydro to be co-ordinated with the production and marketing of power from other sources? Water resources development has an important bearing upon how land in the basin will be used, particularly lands subject to floods, lands that may be irrigated, or lands that will be used for recreation purposes. How will the plans and operations of the river basin agencies be co-ordinated with other planning that influences land use? This includes planning for highway development, municipal land use planning, park and recreation planning and similar activities.

Expressed in another way, river basin development provides only a segment of the services required by our society in any given field such as elec-

tric power, recreation, or land improvement. How much of each service should come through river basin development and how much should come from other quarters? What is the relationship between the river basin agency and other agencies in making these determinations and financing the programs decided upon?

9. *How is national investment in river basin development to be managed so as to assure consistency with national goals?*

Here I am assuming that there will be federal investment and that this investment might increase. The federal government faces a problem in deciding where and how much to invest in river development programs. It must select from river basin regions having varying potentialities. Involved is the question of maintaining consistency between federal investments in water development and policies governing agriculture, transportation, regional development, fisheries, outdoor recreation and power. Investment in river basin development will increase the supply of services in these several areas. In view of the alternatives available to the federal government for increasing the supply of these services, how much federal investment in a particular project or basin is justified?

We have sought to meet this problem in the United States through a system of project benefit-cost analysis. This procedure has no doubt eliminated many questionable projects. Yet, the U.S. federal government still does not have a system of project formulation and budgeting which assures in satisfactory measure the consistency of federal investments in river development with national goals. If the (Canadian) government invests heavily in river basin development, it would appear that specialized machinery will be required at the national level to consider and appraise proposals for federal investment. What should this machinery be and how should it operate?

10. *How is the political responsibility of the river basin agency to be assured?*

Based upon the United States experience, there are three major dangers. One of these is that the river basin agency will become concerned primarily with a single purpose and not reflect accurately the interests of society in all purposes. Related to this danger is the possibility that the river basin agency will in effect become a prisoner of special interest groups. A third danger is that the river basin agency, like all institutions, will become inflexible over time.

These concerns resolve themselves into questions of the following nature: How is the river basin

agency chartered, what are its responsibilities under its charter, and how are these responsibilities altered when needs for change arise? Should the river basin agency be directed by a single administrator or by a governing board or commission? To whom should the agency be accountable? Who should designate the administrator or governing board? That is, should this group be designated by the federal government, by the provincial government, or by some combination thereof? How long should the administrator, the board, or the commission serve, and how are changes made?

### *Conclusion*

As I stated at the outset, the foregoing issues are basic in arriving at an effective system of organization for river basin development. The solution of these issues will not be easy. I hope and trust that the discussion which follows will illuminate these issues more fully and contribute to their solution.

By identifying these issues and their complex ramifications, I hope I have not conveyed the impressions that you are confronted by insoluble problems. There is no basis for such a conclusion. Instead, I feel that your prospects are bright and promising. Development potentials are enormous. The institutional environment is still flexible and therefore organizations can be molded to meet your needs. Above all, the people of Canada are conscious of their opportunity and display the energy, spirit and qualities of character which have ennobled the history of North America.

### **Panel Member (Mr. CASS-BEGGS)**

The Saskatchewan-Nelson system extends from the eastern slopes of the Rocky Mountains to Hudson Bay, with the rivers traversing three provinces. The North Saskatchewan River crosses the northern prairie country of Alberta, then crossing into Saskatchewan, flows in a generally southeasterly direction to Prince Albert. The headwaters of the south branch of the river are the Bow River, flowing through Calgary, and the Red Deer River. These two streams join on the Alberta-Saskatchewan border to form the South Saskatchewan River which crosses the southern prairies of Saskatchewan, turns north in the middle of the prairie country, and joins the north branch some distance east of Prince Albert in approximately the geographical center of Saskatchewan. At this point the combined river flows through parkland and well-forested country to enter Manitoba and flow through The Pas and Cedar Lake into Lake Winnipeg. Lake Winnipeg in turn is drained by the Nelson River, which flows in a generally north-easterly direction to Hudson Bay. At no point do the rivers form provincial or national

boundaries, but they flow in succession from Alberta to Saskatchewan and on to Manitoba.

The source of water is largely the melting snows of the Rocky Mountains supplemented by a rather small runoff from the prairie country. The Nelson River, draining Lake Winnipeg, includes water from the Red River, which runs north from the United States, the Winnipeg River, which enters Manitoba from Ontario, the Assiniboine River, which crosses southern Manitoba from Saskatchewan, and other local rivers draining into Lake Winnipeg. In Alberta and most of Saskatchewan both branches of the Saskatchewan River run through well-defined broad eroded valleys. East of Prince Albert the valley becomes somewhat narrower with occasional rapids but in the Cumberland Lake district, towards the Manitoba border, the river widens out into extensive muskeg area with ill-defined lakes and continues in this general pattern through Manitoba. A considerable number of people live beside the various rivers in Alberta and Saskatchewan, but generally speaking, the river in Saskatchewan east of Prince Albert and entirely in Manitoba lies in the unpopulated areas.

Interprovincial concerns regarding the river system arise mainly out of the fact that any diversions for irrigation would reduce the flow downstream. For example, diversions in Alberta would reduce the flow available in Saskatchewan, and correspondingly the diversions for consumptive uses in Saskatchewan would reduce the available flow in Manitoba. Apart from the particular problems of the allocation of water for consumptive uses, control of diversions, and possible problems regarding pollution, it is difficult to see what immediate advantages might accrue from interprovincial control of the Saskatchewan-Nelson system. It is at least impossible to blame the lack of an interprovincial river valley authority for the lack of development on these rivers.

What then are the serious impediments to further and more rapid development? Certainly the apparent conflict between irrigation and power development is a present impediment. Uncertainty as to the diversions for irrigation leads to hesitation in committing large investment to the development of hydroelectric plants. However, in the Saskatchewan River, at least, this problem is not as serious in practice as it would appear to be. The South Saskatchewan reservoir, when it is completed, and similar reservoirs that might be contemplated on the north branch of the river will provide such adequate storage that it will be possible to utilize the available river flow in almost any desired pattern, and, apart from riparian flow and some ice problems, it will be possible to release the available water to meet the peak load of the electrical system. Consequently, as the water available for power becomes less and



less, as a result of irrigation, the period of generation and the energy generated can be reduced while the kilowatt capacity and its contribution to meeting peak loads can be maintained. This use of the hydro capacity of the Saskatchewan system, of course, presupposes the availability of energy from other sources—coal, gas or oil—or from hydro projects not subject to restriction for irrigation purposes.

In practice, in Alberta and Saskatchewan very cheap fuels are available for the development of base-load plants, and the development of the hydro-electric resources should involve carefully integrated thermal and hydro projects, with thermal plants used on base load.

The situation in Manitoba is slightly different in that the province does not have access to abundant coal within its borders; however, the Saskatchewan lignite is close to its western border. Manitoba has hydroelectric power from more than one watershed, and the regulation provided by Cedar Lake for the Saskatchewan River and by Lake Winnipeg for the Nelson River would accommodate almost any pattern of hydro use and therefore permit the maximum use of run-of-the-river developments that might be made on other streams.

It must be recognized that both hydro and steam units must be developed in large individual blocks to secure reasonable economy. In the case of steam plants today it is necessary to go to increments of the order of one-half million kilowatts in a single unit to secure significant economies of operation, and in hydro plants it is desirable to go in a single stage development to the installation that will permit the development of the total energy of the site. Later stages of the hydro development may well increase the capacity for the purpose of peaking. The economical increments in capacity that are thus involved are, generally speaking, large compared with the existing and potential loads of the Prairie Provinces taken individually and even collectively. Thus a major impediment in the economic development of the resources of the Prairies is the lack of adequate markets for the energy produced. Export of power from one province to another, the export of surplus power to the United States, and the transportation of major amounts of power to other provinces and load centers appear to be prerequisites of really large-scale power development in the Prairie Provinces.

However, while the export of power may be of significance, the proper utilization of Prairie Province resources involves the development of local markets. Undoubtedly power can be produced at a price which would meet the needs of almost any industry given a sufficient scale of production, but the product of the industry must be absorbed locally (which

presupposes a sufficient local population) or alternatively it is faced with extremely high freight rates to move it to markets in other parts of Canada. Unless an important raw material for the manufacturing process, or a particular market exists in the Prairie Region, it would probably develop that it was more economical to transmit the electrical energy to the source of material and markets than to develop industry based on the local energy resources alone.

In so far as irrigation may be expected to contribute both to the population and to the industrial development of the Prairie Regions, it is extremely important that a rapid development policy be adopted with respect to irrigation. In this way, loads dependent on irrigation may develop at a rate which will make it economically feasible to develop the hydro resources along with the irrigation potential of the rivers. Clearly, close co-ordination of irrigation development, hydroelectric and thermal electric power developments, and industrial development based on local raw materials and available markets is essential for the development of the Prairie Provinces.

In the particular case of the Prairie Region, it does not seem to be necessary to contemplate inter-provincial development authorities. Sufficient of the powers are vested in the provinces individually and the problems are sufficiently different from one province to another to justify separate provincial developments, provided it is possible to develop an adequate authority for the allocation of water for consumptive purposes and provided such allocations can be made at an early date and adequately policed and maintained into the future. It may well be that for this purpose the existing Prairie Provinces Water Board would require strengthening.

While the historical allocation of responsibilities between the federal government and the provinces might very well be different if federation were being contemplated today, it would be absurd to defer the development of provincial resources on account of jurisdictional problems. Generally speaking, the objectives should be to secure the maximum co-ordination of resources within the province, since this is the present authority, and to extend the provincial operation to interprovincial activities when these are inescapable. They should not be accepted as immediate objectives since they can only result in unnecessary delays.

The matters that might call for interprovincial action among the three Prairie Provinces are:

1. Allocation of water for irrigation. Hydro projects must be planned with a reasonably firm knowledge as to the maximum diversion and the earliest probable time schedule.
2. The general shortage of water in the Prairie



Region makes it imperative to retain in, and to divert into, the region the maximum amount of water possible. Certain of these diversions, by making more head available, might in themselves pay for the loss of energy on the normal routes, but most of them would affect the interests of the individual provinces and would need interprovincial agreement.

3. Downstream benefits may accrue, particularly on the North Saskatchewan River as a result of storage developments on the headwaters in Alberta, which, until such time as adequate storage in Saskatchewan were developed, would have value to Saskatchewan.

It is however quite possible to envisage direct negotiations to deal with these and other matters. Much progress could be made in these areas without the more desirable over-all river valley authority.

However, in the federal-provincial relationship there is a fundamental conflict for resource development. There is no possibility of large-scale development of provincial resources without adequate facilities for financing these developments. At the present time, the financial resources involved are vested in the federal government through its control of credit policy and of the Bank of Canada. It is probable that the greatest single impediment to the development of the resources of the Prairie Provinces is the lack of access to low-interest funds repayable over a long period of time. The provision of such funds by the federal government, for example, through the Bank of Canada, would provide the best stimulus to resource development in the underdeveloped provinces of Canada.

However, before such financial provisions could be effective in securing the co-operation of the provincial authorities and the development of their resources, a fundamental aspect of financing must be faced and changed. There is a traditional approach to the financing of resource development that may be summarized in the saying that "he who pays the piper calls the tune." It is essential that the federal government face the proposition that control need not be associated with the provision of financial resources. This requires the provision of a large resource development fund placed in the hands of the Bank of Canada for allocation to the provinces, on some equitable basis, without consideration of the details and merits of the individual resource development programs which the provinces may elect to undertake.

Beyond the payment of interest and the repayment of loans, there should be no direct federal participation in the profits of resource development. It is abundantly evident that the federal government

participates in the benefits of economic development through its ability to levy income tax and no other participation should be sought.

#### Panel Member (Mr. TWEEDDALE)

The resource potential of the St. John River basin which can be developed on a multi-purpose basis has been clearly outlined in the Background Paper which was prepared for this Conference by Dr. H. J. Rowley.

The St. John River is one of the important river systems on the North American continent, in that it is the largest river along the Atlantic seaboard between the St. Lawrence and the Susquehanna rivers. The total drainage area of the basin amounts to 21,600 square miles (about half the area so successfully developed by the Tennessee Valley Authority). Of this total, 7,600 square miles lie within the United States and 14,000 square miles in Canada, including 2,750 square miles in the Province of Quebec and 11,250 square miles in the province of New Brunswick. Seventy miles of the main stem of the river forms the international boundary between the United States and Canada. The St. John River drops some 1,580 feet from its source in Maine to its mouth in New Brunswick.

Of the power potential of the river, amounting to over 1.3 million kw, only 13 per cent will have been developed with the completion of the third unit installation at Beechwood by the New Brunswick Electric Power Commission. The average energy cost of some 4.5 billion kw hours per year from the full hydroelectric potential of the river is less than 5 mills per kw hour using today's cost.

The recreational and tourist potential of the St. John River is very great; but unless development is undertaken on a long range planned basis, and in co-ordination with other water uses, much of the valuable recreational resource of the basin may be lost for all time. With foresight and wise planning I believe that the St. John River Valley could become a recreational area ranking among the best in North America.

The sports fishing and commercial fishing activities in the river have been declining over a period of years. Parts of the main stem of the St. John River and some of its tributaries are polluted by industrial and domestic waste to the extent that the water has become unfit for bathing and other recreational and beneficial uses.

In some parts of the basin, a high percentage of the agricultural land use is devoted to the raising of row crops. The result of this, in many instances, is a high degree of topsoil erosion and a consequent siltation of the river. A valuable and irreplaceable resource of the basin is thus being wasted each year.

Minor flood damage occurs nearly every year in the basin, with major flood damage in some stretches of the river being a potential threat. Corrective flood control measures should be included in comprehensive plans for the multi-purpose development of the St. John River basin.

One of the main sources of cash income in the St. John River basin area is that of its forest products. The forest resource is directly related to the water resources in many ways and with careful planning these two resources could be utilized to the fullest extent and for the greatest benefit of the people in the region.

If the long range planning of multi-purpose water use and resource development of an area such as the St. John River basin could be grouped under a single river basin authority, a number of other aspects could be included:

- (a) Domestic and industrial water supply.
- (b) The possibilities for economic inland water transportation.
- (c) Research and study regarding the present methods of log driving on the river.
- (d) Study of the effects of other water use on waterfowl and wildlife in the basin.
- (e) Co-ordinated development of the resources related to and affected by water would encompass most industrial and economic growth aspects of the area.

The first—and perhaps, the greatest—impediment of the development of the St. John, or possibly of any river basin in Canada, is the failure of people to recognize the resource potentials related to water use; how these potentials are interrelated; and how they may squander their inheritance by neglecting long-range, co-ordinated planning. I suggest the establishment of “grass-roots” study groups and educational programs to stimulate the interest and spur into action those people who are directly concerned with the economic welfare of their own region.

Any orderly and logical resource development program of the St. John River water use is abnormally complicated by the international and interprovincial aspect of the basin.

Another facet of the problem is that of division of responsibility between federal and provincial jurisdictions and the lack of co-ordination between the various federal, provincial and municipal agencies.

There may also be private and public interests now using the water resources of the basin, principally for their own benefit and with little regard to the adverse effects their operations might have on other water uses of the basin.

There may be lack of unison, or of energy and initiative to face squarely and deal with these ob-

stacles to progress. I believe that the over-all resource potential of the St. John River is so great that no impediments should be allowed to stand in the way of sound planning and development.

I have been asked what might be suggested as a means of getting the multi-purpose development concept for the St. John River basin underway.

The following are some personal views on the subject:

1. The province of New Brunswick might take the initiative by organizing discussion groups with interested officials of the Province of Quebec, the State of Maine, the Government of Canada and the Government of the United States. The purpose of these discussions would be to review, analyze and stimulate thinking on the multi-purpose potential of the St. John River basin.

2. It would be the hope that from such informal discussions, formal application for treaty negotiations between the United States and Canada might be developed.

3. The proposed treaty might authorize the formation of an International St. John River Board, or Authority, made up of a representative of the State of Maine, a representative from the United States Government, a representative from the Government of Canada, and a representative from each of the two provincial governments.

The duties of such an Authority could be (a) to provide over-all planning of multi-purpose resource development in the basin, (b) to provide leadership in stimulating and co-ordinating the agencies which now have jurisdictional authority to develop the resources in the three political regions within the basin, and (c) to administer any interrelated water uses which might have detrimental or beneficial effects on other water uses; for example, the administration of downstream benefits to power producers from upstream storage facilities.

4. It might be visualized that each of the three political areas in the basin would thus have its own river Authority which would co-ordinate the agencies implementing projects within its jurisdiction. The international Authority would co-ordinate the activities of all three (and settle) international disputes.

5. If it should be impossible to agree on an international treaty arrangement covering the multi-purpose use of water resources, an attempt should be made to form a Canadian St. John River Authority which would function on a national basis much as suggested for the international Authority.

If the Canadian St. John River participants cannot form a workable Authority, an attempt should be made to have the necessary legislation passed

to set up a St. John River Authority which would plan and co-ordinate those agencies having jurisdictional responsibility in the New Brunswick section of the basin.

6. I suggest that one aspect of the St. John River development which should receive immediate attention, irrespective of any other activity, is that of accelerated negotiations for the development of strong national and international electric power pools to make possible the exchange of large blocks of economy energy. The Canadian utilities should be urged to develop their hydraulic potentials as rapidly as possible, keeping in mind, however, sound economic planning, the future role of most hydro sites for power peaking purposes, and the multi-purpose use of the water resources.

7. We have been asked what the role of the federal government might be in the development of the resources of a river basin on a multi-purpose basis. Most of the resource development aspects of water use fall within the jurisdiction of the provinces and we believe should remain there. But the federal government might co-operate with the provinces in the following fields and thus greatly assist in the optimum development of water resources by:

- (a) Providing research and technical skills in such fields as hydrology, hydraulics, meteorology, surveys, fish culture and biology, agriculture, forestry, geology, recreation and stream pollution.
- (b) Providing appropriations for such development fields as flood control, navigation, correction and abatement of stream pollution, rehabilitation and maintenance of our fish and wildlife population, forest management and land use improvement, etc.
- (c) Providing, under the river basin Authority concept, stabilization of interest rates for hydroelectric development by making long-term loans available at a rate of interest which might reflect the average cost of money over a relatively long period of time, rather than that of the fluctuating going-rate method.

In closing, I should like to suggest that the St. John River basin might be selected to provide a pattern of international, interprovincial and federal-provincial co-operation and goodwill which may inspire the formation of other river basin authorities in Canada.

#### **Panel Member (Mr. DeGUISE)**

(A description of the Ottawa River basin and its developments. The speaker acknowledged a report by the Water Resources Branch, Department of North-

ern Affairs and National Resources, as being a source of information for his papers. Mr. DeGuise emphasized that there are several public and private agencies operating power developments on the Ottawa River, and he described some of the agreements which these agencies have made among themselves.)

#### *General description*

The Ottawa River with a total length of some 700 miles and a drainage area of 57,000 square miles, constitutes the principal tributary of the St. Lawrence River. Its watershed is bounded on the east by the St. Maurice basin, on the north by the James Bay drainage, and on the west and south by river basins tributary to the Great Lakes.

Rising in Capimitchigama Lake, approximately 155 miles due north of the city of Ottawa, the river pursues an irregular course westward to the head of Lake Timiskaming from where it takes a generally southeasterly direction to enter the St. Lawrence River at the Island of Montreal. For 375 miles of its length, it forms the boundary between Ontario and Quebec.

Above Lake Timiskaming the Ottawa basin comprises an area of some 9,700 square miles of a generally heavy-timbered, Laurentian formation. The total descent in the 300 miles of the Ottawa River from its source to Lake Timiskaming is some 610 feet. Of this drop, 330 feet occurs in the 240 miles above the head of Lake Quinze-Simard and, for the most part, consists of moderate rapids in the reaches connecting the many lake-like expansions of the river. Rapid II and Rapid VII are two such rapid sections which have been developed for power, each controlling about 68 feet of head. The remaining portion of the 610-foot fall occurs in the short reach of 15 miles connecting Lake Quinze-Simard with Lake Timiskaming. This reach, commonly referred to as the Quinze River, falls 280 feet in a continuous series of rapids, the upper 90 feet of which is utilized by the Quinze power development.

At the foot of the Quinze rapids the river abruptly changes direction and flows south for 106 miles to its junction with the Mattawa River. Dominating this section of the Ottawa River is Lake Timiskaming with a length of 71 miles and an area of over 100 square miles. This lake, controlled by a dam at the village of Timiskaming, has been one of the major reservoirs of the Ottawa River since 1912. From Lake Timiskaming to Mattawa, the Ottawa River in its natural state descended 70 feet in a distance of 35 miles. The Otto Holden (La Cave) hydroelectric plant, situated on the river just above the town of Mattawa, now controls all of this reach and also controls the outflow of Lake Timiskaming when the lake is at a low stage.

Between Mattawa and Montreal, the river flows



in an easterly direction and receives many large tributaries through its 325 mile course. In this reach, the Ottawa River formerly contained a large number of rapid sections many of which are now flooded out by hydroelectric projects. The Des Joachims power development, with a normal head of 133 feet, has flooded the river valley upstream to the town of Mattawa.

Below Des Joachims the river flows through the river expansions known as Allumette and Coulouge Lakes and the rapid sections of Allumette and Paquette. It is at the downstream end of Coulouge Lake where the next control structure exists. Here the river divides to form two channels around Calumet Island with the west or Rocher Fendu channel being regulated by the Sullivan Island control dam and the east or Calumet channel by the Bryson power plant operating under a normal head of 60 feet. Between the Bryson plant and the Chaudiere Falls at Ottawa, the river consists of three lake sections, the last one, Lake Deschenes reaching near Ottawa.

Immediately downstream from the Deschenes Rapids are the Chaudiere Falls where water power has been utilized since the year 1800 when a settlement was started at the site of the present city of Hull. There are presently nine power plants in operation at the Chaudiere Falls with heads ranging from 40 to 20 feet. Below these falls the river has a relatively flat gradient for 60 miles to the Long Sault Rapids near Hawkesbury and then for a further 10 miles to the Carillon Rapids at the entrance of the Lake of Two Mountains. The latter extends downstream to Montreal Island where the waters of the Ottawa River find their way to the St. Lawrence River by means of four outlets.

#### *Water power development*

While some of the larger tributaries such as the Gatineau and Lievre Rivers experienced their greatest power expansion in the 1927-33 period, it was not until after 1950 that the major sites on the Ottawa River were developed. Between 1950 and 1953 the Hydro-Electric Power Commission of Ontario installed a total of 936,000 hp at its Des Joachims, Otto Holden, and Chenaux plants which more than doubled the installation on the river prior to that period.

An inventory of the hydroelectric installations as of December, 1958 on the main stem of the Ottawa River totals 1,625,970 hp.

#### *Storage*

The storage scheme on the Ottawa River had its inception almost sixty years ago in connection with the requirement for a more uniform flow for navigation and power developments on the lower reaches

of the river. The plan was actively pursued and construction was initiated between 1904 and 1908 primarily as the result of the period of extremely low flow in 1905 and the realization that no satisfactory plan could be devised for the proposed Georgian Bay Ship Canal unless it included an efficient partial control by storage of the spring floods of the Ottawa River.

Extensive investigations indicated that the best plan of development would be to concentrate all effort on the construction of concrete dams of considerable height on the three large lakes in the system, Quinze-Simard, Timiskaming and Kipawa, each over 100 square miles in area and draining large watersheds.

Since the completion of these three structures between 1911 and 1914 the storage capacity on the river has been further increased with the addition of the Dozois and Grand Lake Victoria reservoirs and of two power developments with considerable pondage capacity, Rapid VII in 1941 and Des Joachims in 1950.

The important features of the main stem reservoirs are described below:

*Dozois Reservoir:* This reservoir is owned and operated by the Quebec Hydro-Electric Commission. It lies just to the west of the Cabonga reservoir of the Gatineau River basin and is separated from it by the Barriere Dam. The runoff from the 3,100 square mile drainage area is regulated by the Dozois control dam (also known as the Bourque Dam).

The reservoir provides a gross storage capacity of 1,510,000 acre-feet. This storage is controlled by a tri-party agreement involving the federal government, the Hydro-Electric Power Commission of Ontario and the Quebec Hydro-Electric Commission.

The time lag of flow between Dozois and the Rapid VII development is approximately 14 days. It is usual to draw Dozois to its minimum level by March 1, to ensure that the storage water will reach the power developments on the lower reaches of the Ottawa River before the spring break-up. In recent years it has been customary to hold 230,000 acre-feet in Dozois at the end of the winter unless the flow in the river is quite low.

*Grand Lake Victoria Reservoir:* Grand Lake Victoria is an expansion of the Ottawa River immediately downstream from the Dozois reservoir. The drainage area at its outlet is 3,930 square miles.

To facilitate the towing of logs on the lake, a low timber dam was completed in 1948 by the Quebec Hydro-Electric Commission. Stored water is not subjected to a definite regulation procedure and the water is usually considered as "in transit" between the Dozois reservoir and Rapid VII headpond.

*Rapid VII Headpond:* The Rapid VII power development is owned by the Quebec Hydro-Electric

Commission and first commenced operation in 1941. This development has a large headpond providing a storage volume of 460,000 acre-feet. As the use of this storage results in a reduction of head at the Rapid VII powerhouse and thus a loss of generating capacity, the storage is used only when it is required at the Rapid VII and Rapid II powerplants and thus cannot be considered as available for other downstream developments.

**Quinze Reservoir:** The dam controlling the Quinze reservoir is situated a few miles downstream from the outlet of Quinze Lake and controls the level of that lake and of Lake Simard. The reservoir is owned by the Government of Canada and is operated by the Ottawa District Engineer of the Department of Public Works.

The construction of the reservoir was completed in October 1914 and provides a nominal storage capacity of 1,060,000 acre-feet.

**Timiskaming Reservoir:** The two Timiskaming control structures are owned by the Government of Canada and are operated by the Ottawa District Engineer of the Department of Public Works. The dams are pier and stoplog structures similar in design to the Quinze Dam and block the two channels of the Ottawa River known as the Quebec and Ontario channels at the outlet of Lake Timiskaming.

The drainage area of 17,750 square miles above the dam has produced an average runoff of 23,400 cubic feet per second for the 43 years of continuous record available.

With ordinary discharges, a nominal storage capacity of 987,000 acre-feet is controlled at elevation 589.0 feet. With high discharges, however, a difference in level of almost three feet develops between Timiskaming and the upper end of the lake at Haileybury. At such times it is necessary, if possible, to keep the level at the dams lower than elevation 589 by an amount depending upon flooding conditions at the upper end of the lake. In periods of extreme floods, however, the water level at the dam will exceed elevation 589 with all gates open.

**Des Joachims Headpond:** The Des Joachims power development has a pondage capacity of 186,000 acre-feet between limiting elevations of 500 and 490 feet. The forebay is drawn down to elevation 490 during periods of high flow to prevent flooding at the town of Mattawa situated near the upper end of the pond.

**Otto Holden, Chenaux and Chats Falls Headponds:** These three power developments have pondage capacities of 97,960, 29,940 and 13,660 acre-feet respectively.

### *Ownership of interprovincial power sites*

In January of 1943 an agreement was reached between the provinces of Ontario and Quebec, the Hydro-Electric Power Commission of Ontario and the Quebec Streams Commission<sup>1</sup> regarding the use of the water powers of the interprovincial reach of the Ottawa River.

The Province of Quebec leased to the Ontario Commission the Quebec waterpowers, land and all the rights within the legislative authority of the province, required to utilize the following sites to the designated head-water levels (feet above mean sea level):

Cave and Forneaux	head-water level 575
Des Joachims	head-water level 500
Chenaux	head-water level 285

In conjunction with the Des Joachims waterpower the Commission was granted the right to utilize one-half of the fall at the site known as Paquette.

In return, a similar lease by the province of Ontario to the Quebec Streams Commission was granted for the following sites to the designated head-water levels (feet above mean sea level):

Rocher Fendu	head-water level 350
Carillon	head-water level 135

In conjunction with the Rocher Fendu waterpowers the Quebec Streams Commission was granted the right to utilize one-half of the fall at the Paquette site.

### *Undeveloped sites*

The only major undeveloped site on the main stem of the Ottawa River is at Carillon, about 57 miles from the mouth of the river and immediately downstream from Angliers, where some 250,000 hp could be installed. At Carillon a head of about 63 feet is available for the production of power. For the period of record, 87 years, the average annual flow at Grenville, 13 miles upstream from Carillon, is 71,000 cubic feet per second<sup>2</sup>. Two other sites of smaller potential are as yet undeveloped.

<sup>1</sup> The Quebec Streams Commission became a part of the Quebec Department of Hydraulic Resources in 1955.

<sup>2</sup> The Quebec Hydro-Electric Commission commenced construction of the Carillon project in the fall of 1959. The site is at the eastern extremity of the interprovincial reach of the Ottawa River and the average developed head will be 60 feet. The ultimate installation is expected to be 14 Kaplan units of 60,000 HP. each or a total installation of 840,000 HP. The spillway section will contain 12 gates, each 50 feet wide by 32 feet deep with a total discharge capacity of 380,000 cubic feet per second.

## DISCUSSION

Following the presentation of the lead-off speaker and the panel members, the Chairman suggested that the problems facing the Workshop should be considered under the following headings:

1. Purpose and scope of the multi-purpose concept.
2. Federal-provincial considerations.
3. Public-private considerations.
4. Organization—agency and functions:
  - (a) Studies and investigations, and
  - (b) Construction, management and marketing.

After a general discussion of these subjects, the Workshop agreed upon the following conclusions:

#### 1. *The multi-purpose concept*

The reason for multi-purpose consideration is that the renewable resources of a river basin should be planned and developed on an integrated basis making maximum use of the physical and human resources and skills for the maximum well-being of the public generally.

The scope of multi-purpose river basin development should be such that all relevant purposes related to water use are taken into account. Ground water use, as well as surface water use, should be considered. However, it is clearly indicated that each river basin has its own particular problems, which depend on the size, geography, and the state of economic development of the basin, and possibly on other factors.

#### 2. *Federal-provincial considerations*

Co-operation between federal and provincial agencies currently exists in many fields, both on formal and informal bases; however, there is no fixed pattern for this co-operation, and frequently the roles of the two levels of government are unclear. This lack of clarity is inhibiting development in many areas. Also, in the past, there has been no consistent policy for financial participation.

The roles to be played by the federal and provincial governments should be as follows:

- (a) Since the water resources are owned by the provinces, initiative for development should

rest with the provinces. There could be exceptions to this in cases of interprovincial and international river basins.

- (b) The role of the federal government with respect to navigation and fisheries is recognized and accepted. The federal role might well include collaboration in data collection, project planning, and surveying and engineering studies at the request of the province or provinces concerned.
- (c) Prime responsibility for financing resource development rests with the provinces or municipalities, but federal assistance should be made available in the form of long-term loans to self-liquidating projects, without proprietary interest or control, and grants-in-aid to other projects should be made.

It would be desirable to establish a national resource development fund from which the provinces could draw to finance specific projects.

In order to secure a sufficiently rapid expansion of markets to permit large-scale economic hydroelectric developments, reconsideration should be given to policy with respect to the export of electrical energy.

#### 3. *Public-private considerations*

It is possible for developments by both private and public agencies to take place independently of one another in the same river basin. However, it is necessary that there should be a willingness to co-operate in achieving optimum multi-purpose use of the water resource and that there should be adherence to conditions provided in water licences.

#### 4. *Organization*

Time did not permit a detailed discussion of the types and functions of resource development agencies which would best serve the needs of particular river basins. However, the papers presented by the panel members describing the Nelson, St. John and Ottawa river basins clearly indicated that the most suitable type of agency would vary for each river basin, and each would have to be tailored to its own requirements.

## WATER WORKSHOP A

Friday, October 27

The Workshop reconvened on Friday for further consideration of the subjects which had been discussed at the Tuesday session. The conclusions reached on Tuesday were agreed upon, with some

modifications and amplifications as detailed below. Further discussion on private and public development agencies stressed the need for better communication between agencies to ensure full ex-



change of ideas and experiences. The point was also made that when concessions for the use of water are granted, whether to public or private agencies, they should be covered by effectively administered control regulations. In order to achieve multi-purpose objectives in virgin or partially developed river basins, adherence to an over-all plan is essential.

Special reference was made to the two final paragraphs of the Background Paper "Effects of the Legislative and Administrative Framework," by D. W. Carr, Vol. 1, Page 139, in which Mr. Carr stresses the selection of particularly capable personnel as being the critical factor in achieving co-ordination.

With respect to organization, the Workshop felt that regional differences made it impossible to set down a type of organization which would be universally applicable. However, the group approved the principles for organization as detailed by River Valley Regions Workshop B on Thursday, October 26. The assumptions made by this same Workshop are pertinent to the planning and development stages as well as to the management of river basin projects.

The subject, "federal-provincial considerations" was reconsidered in an effort to reflect the views of the

Workshop membership more precisely. After a long discussion these views were restated as follows:

1. Since water resources are owned by the provinces, primary responsibility for development must be provincial.
2. Responsibility in cases of interprovincial river basins should be based on interprovincial co-operation.
3. The federal government has an obligation to provide encouragement and leadership to resource development (within the framework of the constitution) through monetary, fiscal, trade, and other economic policies.
4. There should be joint action by all governments through appropriate machinery to:
  - (a) Create an awareness among the public of the national need for water resource development,
  - (b) Organize and finance water resource investigations, and
  - (c) Adopt a well-defined long-term policy with respect to financing of projects.



# Water Workshop B

TUESDAY, October 24

## Benefit-Cost Analysis

- Chairman: E. P. WEEKS, Director, Economic Studies Branch, Canada Department of Public Works.
- Co-Chairman: J. M. PARKER, Director, Soils and Crops Branch, Manitoba Department of Agriculture and Conservation.
- Lead-Off Speaker: JOHN DAVIS, Director of Research and Planning, British Columbia Electric Company Ltd.
- Discussants: ERIC BAKER, Member, Conservation Council of Ontario.  
A. D. SCOTT, Department of Economics, University of British Columbia.
- Rapporteurs: W. R. D. SEWELL, Economist, Water Resources Branch, Department of Northern Affairs and National Resources.  
CHARLES E. DESLAURIERS, Director of Hydraulic Services, Quebec Department of Natural Resources.

### Chairman (Mr. WEEKS)

#### 1. *The need for more rational project evaluations*

Canadians are becoming more aware of the need to make the best use of resources. More and more it is a case of choosing among various proposals for resource development. To make the wisest decisions, we need a rational and consistent approach to the evaluation and selection of projects. The need for such an approach is readily apparent since projects, and their priority, must be considered in the light of:

- (a) Conflicting and changing demands on the resource concerned, limitation of funds available to the authorities responsible, and technological developments; and
- (b) The advantages of a regional approach to management, and hence the fact that a number of authorities may well be involved in construction and operation.

The tendency has been to make decisions on projects largely on the basis of demonstrated technical and financial feasibility. Generally, the only questions posed in evaluations have been: Is the project sound from an engineering point of view? Is it possible to obtain the funds for its construction and operation? Will the project provide sufficient revenues to cover the costs? It is clear, however, that much broader considerations than these need

to be taken into account. We must ask such questions as:

- (a) What would be the broad economic effects of the project?
- (b) Is this the best means of providing the required services?
- (c) Is this the best use of the land, labor, and capital involved in the construction and operation of the project?

In short, our aim should be to determine:

- (a) The internal economic feasibility, i.e. whether the benefit will exceed the cost;
- (b) Which alternative, or combination, will best achieve a given end; and
- (c) What priority should be given to projects providing different services—in the light of funds available.

#### 2. *The benefit-cost analysis approach*

Benefit-cost analysis provides a useful approach to the determination of the economic feasibility of given projects, and to the comparison and ranking of projects competing for development. This approach is based on a number of fundamental principles, including:

- (a) The consideration of all relevant benefits and costs of a given project;



- (b) The weighing of possible alternatives to that project; and
- (c) The consideration of incremental additions to the scope and scale of projects. (It should be noted that in the case of water projects, the increments involved are often rather large.)

In all our thinking, we must not forget that a *framework* of analysis is just that. The problems of application remain. These may include defining, measuring, and forecasting of benefits and costs; giving due weight to what is not easily measured, but which is often very significant in final decisions, e.g. the aesthetic and human factors, and so forth. In addition, a shortage of staff, time and funds may limit the depth of the analysis. Nevertheless, the benefit-cost analysis approach would seem to represent a useful aid in decision making.

If a generally acceptable benefit-cost approach can be arrived at, then, in future, it will be easier for authorities at various levels to make decisions as to the selection of their own projects; and, in addition, to co-operate with other authorities on projects of mutual interest.

### 3. *The draft handbook*

The Secretariat of the Conference decided that the question of project evaluation and selection should receive particular attention. To facilitate the discussions in this Workshop, the Secretariat requested that a draft 'Benefit-Cost Analysis Handbook' should be prepared. This has now been circulated.

It is the aim of this Workshop to consider the benefit-cost analysis approach. Dr. Davis will outline the principles of the approach and will apply these to a particular case sample; namely, selection between three alternative means of providing electric power in British Columbia.

Following Dr. Davis' presentation, Dr. Scott will discuss assumptions of the analysis, including the viewpoint, and treatment of secondary benefits, taxes, employment, and interest rates.

Later, Mr. Eric Baker will discuss some cases, particularly in Ontario, where the adoption of a benefit-cost analysis approach in the decision-making process would have led to much more desirable results for the community.

It is hoped that the Workshop, following its deliberations, will be able to come up with some recommendations regarding the desirability of publishing a Guide to Benefit-Cost Analysis, which will be useful to those concerned with evaluating projects in different parts of Canada.

### **Lead-Off Speaker** (Mr. DAVIS)

Planning is rarely an easy task. It means looking ahead and it means making decisions based on

estimates rather than established facts. Accuracy, under these conditions, gives way to different degrees of reasonableness. Certainly, our basis for decision making is no better than the tools which we employ in assessing the situation before us. Benefit-cost analysis is such a tool. Because it provides us with a broad framework against which we can test the advantages and disadvantages of different courses of action, it has much to recommend it as a procedure to be used by those who are responsible for the economic evaluation of resource development projects and programs.

As the lead-off speaker on this subject, I too have a choice. I can plunge straight into the mechanics of benefit-cost analysis. Or I can skim lightly over the subject, choosing a few examples in order to make a point here and there. My inclination is to take the latter way out. Perhaps, by concentrating on the power situation in British Columbia, I can give some impetus to the discussion. Other speakers, no doubt, will explain the theory and give a more detailed account of the principles which support the benefit-cost analysis approach to decision making.

Many of you will have read something in the press about the Peace and Columbia River power programs. They are among the largest to be undertaken anywhere in the world. Due to our small population and the limited number of large industrial consumers in British Columbia, their output cannot be absorbed all at once. Each of these alternatives, together with the related opportunities which they provide for employment and the establishment of new industries, must, therefore, be explored. No stone should be left unturned, our twin objectives being those of greater efficiency and a higher rate of economic growth.

Various engineering studies have been carried out. Some cost and other financial data have also been published. These investigations, in the main, have proceeded along conventional lines. Though straightforward, they have been limited in scope. The tendency has been to look at each project or program in isolation. Their relative merits, in other words, have not been fully explored. Nor has a concerted attempt been made to view such developments against the broader economic background of the region as a whole. By pursuing the reasoning inherent in benefit-cost analysis, we can set off these alternatives more fairly, one against another. Their final ranking can then take place in the light of all the circumstances which have a bearing on the decision-making process.

Were one to adopt the methodology outlined in our Workshop handbook, one would have to make adequate allowances for such secondary values as flood control payments and the impact of large capital expenditures on employment. Longer-term considerations, such as the gradual decline in downstream

power benefits returned to Canada by the United States, must be included. These effects, together with the fact that price changes may be possible in certain areas, can have a significant impact on the net benefits credited to each program. Clearly, the one that can bring about the greatest improvements, regionally and in terms of new industrial opportunities, should head the list in so far as the province of British Columbia is concerned.

I would like to stress this matter of alternatives for a moment. No project is economically justified unless it can be built and operated with a smaller sacrifice of goods and services than any other project which could take its place. Benefit-cost analysis builds on the idea that there is a limit to the benefits which can be claimed for any project or program. This limit is set by the costs which would have to be incurred in building and operating the next best alternative. Beginning with the most expensive, one project sequence after another will be eliminated. In the end, we will be left with two. Then, the more costly one will set a final ceiling on the benefits which can be claimed in favor of the other.

It is sometimes thought that, in order to be compared, two projects must be either identical in scale or meet the same market requirements. This is not necessary if we employ the techniques of benefit-cost analysis. Each project or program can meet different needs; they may even be located in different parts of the country. The one with the highest ratio of benefits to costs should still go ahead and the other should be downgraded in the scheme of things.

One should not be misled by the mathematical appearance of precision given by this type of analysis. In circumstances where the resource development programs differ greatly, one from another, the benefit-cost ratio differences must likewise be wide to be decisive. Only when similar projects or programs with the same technological and financial characteristics are competing for identical markets can benefit-cost ratios which differ by a few percentage points be regarded as significant for decision-making purposes. Usually—and where there is a wider variety of circumstances—the margin has to be more like 10 or 20 per cent.

The first step in any over-all analysis of this type is to make a projection of demand. For my purposes, I have adopted the long-term forecasts of power sales prepared by the electric utilities in British Columbia. Further allowances have been made for "special industrial loads." (See Table I). These estimates were then converted to value terms by multiplying the kilowatt-hour volumes by the electric rates now in effect in the different service areas throughout the province. Downward adjustments were made in circumstances where increased consumption would

probably lead to lower average prices. Reasonable allowances were also made where improvements in the efficiency of thermal generating plants and transmission facilities would unquestionably result in lower average costs. To put it another way, even this first rough schedule of benefits should allow for such changes in rates and costs as would logically follow from the growth of these market areas and their being served by larger, better integrated and more efficient sources of supply.

At this early stage we are still focusing our attention on the most obvious of regional alternatives. (They) may not include the best of all possible plans. Other projects and project sequences must be optimized and compared before we know we are finally on the right track. Lower costs, meanwhile, should be recognized as leading to lower prices. Lower rates, in turn, can mean additional customers and larger demands. Following this reasoning, the benefit series and the cost series have to be reviewed again and again. Nor is the whole exercise complete until, like competition in the market place, demand and supply are finally in balance, with the cost of the next best alternative setting a ceiling on the benefits which can be claimed by the best project or program in the pack.

Once we have prepared our first schedule of benefits, we must turn to the cost side of the ledger. Each project has to be cleared from an engineering and legal point of view. Then its optimum scale of development must be established on economic grounds. This our handbook tells us, is at the point where "net benefits" are at a maximum. The next step is to rank our various alternatives in order of their benefit-cost ratios, the one with the highest ratio qualifying as the first to be built, and so on. In this selective process, we must have regard to a very important fact, namely, that the prior selection of one project may reduce the benefits attributable to all the rest.

The Columbia River Treaty, for example, recognizes this principle when it comes to the construction of reservoirs for the storage of water. The project with the highest single ratio of benefits to costs (the High Arrow Dam) has been given the "first in" or "first added" position. It retains title to these benefits and the remaining reservoirs (Duncan Lake and Mica Creek) must therefore share what is left. Each, in turn, as it makes its way to the head of the list of economic alternatives, takes something away from the others. Finally, a point is reached at which the benefits are less than the cost. The "last in" project must still be able to exhibit an excess of benefits over cost. Failing this, it should not be built. Lacking economic feasibility, it should give way to other possible developments in, or outside of, the same river basin.

The ranking of the Peace River power projects is not difficult. Only two of them have been engineered so far, the largest having to be built before the power output of the river can be evened out from one season to the next. As the large Portage Mountain dam will provide the regulation necessary to "firm up" the smaller one, the latter may be referred to as a "dependent" project. Here, then, we have a simple sequence. Yet, as it consists of separable components, the development of the Peace really qualifies as a "program" rather than a "project."

The situation in respect to the Columbia is much more complex. Not only does it consist of numerous projects, each separately developable one from the other, but various interrelationships can also exist. No doubt the internationally important Treaty Storage Projects will be built first. Other developments, at site and at other locations on the Columbia, will

then be put in place. Some of them will take advantage of existing storages and others will make downstream contributions of their own. Recognition of these supplementary values, both in British Columbia and internationally in the United States, can affect the timing and sequence of the over-all plan for the basin; so can changes in load growth and differences in long-term interest rates. In so doing, they may render one array or sequence of projects out of date and replace it with another.

The Columbia is unique in yet another respect. I am referring to the lump sum payments totalling more than \$64 million which must be paid to Canada for flood control benefits accruing to the United States under the Treaty. Not only is this additional income identifiable in dollar terms, but it also falls due as and when the Treaty Storage Projects are completed. These flood control benefits are important

**Table I. Forecast of Electric Power Requirements<sup>1</sup> in B.C.**

(In millions of kilowatt hours)

Year <sup>2</sup>	Vancouver Island Vancouver Area Utility Load	Kamloops and North Okanagan Utility Load	Trail and South Eastern B.C. Utility Load	Northern B.C. Utility Load	Special Industrial Loads	Total Power Requirements Met By—		
						Peace Program <sup>3</sup>	Columbia Program <sup>4</sup>	Thermal Program <sup>5</sup>
1.....	71	260	49	.....	.....	.....	238	238
2.....	539	307	251	481	.....	791	1,097	1,097
3.....	1,206	354	397	535	.....	1,726	1,957	1,957
4.....	1,791	419	631	595	1,000	3,661	3,841	3,841
5.....	2,478	469	815	639	2,000	5,623	5,762	5,762
6.....	3,255	518	970	688	3,000	7,651	7,743	7,743
7.....	4,147	568	1,184	740	4,000	9,833	9,899	9,899
8.....	5,126	628	1,371	792	5,000	12,105	12,125	12,125
9.....	6,223	684	1,556	854	6,000	14,506	14,463	12,815
10.....	7,317	775	1,797	917	7,000	15,864	16,889	12,815
11.....	8,401	826	2,038	983	8,000	15,864	19,265	12,815
12.....	9,680	903	2,285	1,056	9,000	15,864	21,868	12,815
13.....	11,041	990	2,585	1,136	10,000	15,864	24,612	12,815
14.....	11,415	1,078	2,830	1,223	10,400	15,864	25,723	12,815
15.....	10,715	1,178	3,129	1,311	10,400	15,864	24,903	12,815

FOOTNOTES: <sup>1</sup> Requirements at Receiving Stations i.e. Excluding losses in generation and major transmission.

<sup>2</sup> Year 1 in this table is 1966-67. The table covers only the period 1966-67 to 1980-81, since the capability of each program is fully utilized before the 15th year.

<sup>3</sup> Peace River sources are assumed to meet the load growth requirements of the Vancouver Island and Vancouver areas, Kamloops, the North Okanagan and Northern B.C. beginning in year 2, and reaching maximum capability in year 10.

<sup>4</sup> Columbia River sources are assumed to meet the load growth requirements of the Vancouver Island and Vancouver areas, Kamloops, the entire Okanagan, and South Eastern B.C. beginning in year 1, and reaching maximum capability in year 14.

<sup>5</sup> Thermal power sources are assumed to meet the same load growth requirements as the Columbia program beginning in year 1, and reaching maximum capability in year 8.

REFERENCES: 1. "British Columbia Energy Board Forecast of Electric Power Needs to 1985," Victoria, March 1961.

2. B.C. Electric Co. Forecasts of Load Requirements in the Vancouver Island and Vancouver Areas to 1985.



for another reason. They will accrue to Canada at a relatively early stage in the development of the Columbia River basin.

This emphasis on the early realization of the Columbia flood control benefits is intentional on my part. Timing is of the essence. Benefit-cost analysis gives specific recognition to the principle that savings

made at an early stage in any given program must be given a higher rating than the same amount of savings made at any later stage in that, or indeed any other, program.

Utilizing the data outlined in Tables II and III, it is possible to work out the annual and cumulative costs associated with the generation of electric power

**Table II. Estimated Capital Investment and Capacity**

	Peace River <sup>1</sup> Program	Columbia River <sup>2</sup> Program	Thermal Power <sup>3</sup> Program
Ultimate Capacity			
Peak.....	3,410,000 KW	5,122,000 KW <sup>4</sup>	2,430,000 KW
Energy.....	16,500 million KWH	26,828 million KWH	16,284 million KWH
Capital Investment <sup>5</sup>			
in Generation.....	\$529.1 million	\$1,013.5 million	\$354.5 million
Transmission.....	\$380.9 million	\$322.3 million	\$127.5 million
Total.....	\$910.0 million	\$1,335.8 million	\$482.0 million

FOOTNOTES: <sup>1</sup> Peace River Program consists of Portage Mountain and Site I only.

<sup>2</sup> Columbia River Program consists of entire development of the Columbia in Canada in accordance with the Columbia River Treaty (the Treaty Projects have a maximum capacity of 1.3 billion Kilowatts).

<sup>3</sup> Thermal Power Program consists of four 150,000 KW, gas-oil fired steam units at Vancouver and eight 230,000 KW, coal fired units at Hat Creek, near Lillooet.

<sup>4</sup> Columbia Program capacity figures include the maximum downstream benefits returnable to Canada.

<sup>5</sup> Total Capital Investment: includes allowances for preliminary investigations, engineering and supervision, interest during construction and cost of financing (but excludes working capital).

REFERENCES: 1. "Report on Power Costs" by Sir Alexander Gibb and Partners and Merz and McLellan, submitted to B.C. Energy Board, July, 1961.

2. "Report on the Columbia and Peace Power Projects," by the B.C. Energy Board, July 1961.

**Table III. Annual Charges at Maximum Development**

(Expressed as percentages of total capital investment)

	Bond Interest and Depreciation <sup>1</sup>	Operation and Maintenance	Other <sup>2</sup>	Fuel	Total
Peace River Program.....	5.96%	0.48%	0.30%	.....	6.74%
Columbia River Program.....	5.87 <sup>3</sup> %	0.57 <sup>4</sup> %	0.30%	.....	6.74%
Thermal Power Program.....	6.23%	0.84%	.....	3.22 <sup>5</sup> %	10.29%

FOOTNOTES: <sup>1</sup> Bond interest at 5-1/2% and depreciation calculated on a sinking fund basis. Composite lives work out to approximately 48 years for the Peace River, 52 years for the Columbia and 40 years for the Thermal Program.

<sup>2</sup> "Other" includes water taxes on both capacity and energy.

<sup>3</sup> Calculated on total Canadian investment: U.S. flood control payments to Canada treated as a benefit rather than as a reduction in costs.

<sup>4</sup> Includes an allowance of \$1.50 per kilowatt of capacity of Canada's downstream benefit entitlement.

<sup>5</sup> Annual charge equivalent only: at full development full costs are assumed to be 2.0 mills per kilowatt hour for gas; 3.25 mills per kilowatt hour for oil; and 0.82 mills per kilowatt hour for coal.

and the creation of flood control values. Those for the Peace, Columbia and thermal power plant programs are listed in Tables IV and V.

The treatment of taxes is noteworthy. Levies on property and water licence payments have been left out of the final calculations, as they merely constitute money transfers within the provincial economy. The same applies to royalty payments in connection with the mining of coal, oil and natural gas. Federal income tax payments (though not applicable in this study) are in a category by themselves. As they constitute a transfer of goods and services out of the province and to other parts of Canada, they are a cost to the people of British Columbia and must be treated as such.

Having forecast the primary benefits and enumerated the costs directly associated with these different programs, we are now in a position to make certain comparisons. Table VI indicates that the Columbia River development program leads the

others in so far as "net benefits" are concerned. Yet it also tells us that these savings are accompanied by greater outlays in the form of interest payments, depreciation, maintenance and other operating expenses. The "rate of return on investment" test is not very useful as current operating and maintenance charges constitute too high a proportion of total thermal plant costs. So, we are forced to fall back on the benefit-cost ratio approach to program selection.

Table VI indicates that, even when the flood control values attributable to the Columbia are given full recognition, the Peace and the Columbia River are very close together. Only a few percentage points are involved and even these are wiped out if we recognize the possibility of inflation. The margin is too small—so small, in fact, that it is difficult to say which, at this stage in the analysis, is best: the Peace or the Columbia.

A series of thermal plants also appears to be competitive with the two major hydro programs. The fol-

**Table IV. Value of Estimated Primary Benefits**

(Assuming no inflation)

(In thousands of dollars)

Year	Vancouver Island and Vancouver Area @ 6 mills			Kamloops and N. Okang. @ 6 mills	Trail and S.E. B.C. @ 3 mills	Northern B.C. @ 8 mills	Special Industrial @ 3.4 mills		Power Requirements Supplied By		
	Peace	Columbia	Thermal				Peace	Columbia	Peace	Columbia	Thermal
1.....		(426)*	(426)*	1560	147					1281	1281
2.....	(1488)*	3234	3234	1842	753	3848			4955	5829	5829
3.....	2640	7236	7236	2124	1191	4280			10235	10551	10551
4.....	6096	10746	10746	2514	1893	4760	3400	3400	18663	18553	18553
5.....	10200	14868	14868	2814	2445	5112	6800	6800	27371	26927	26927
6.....	14850	19530	19530	3108	2910	5504	10200	10200	36572	35748	35748
7.....	20046	24882	24882	3408	3552	5920	13600	13600	46526	45442	45442
8.....	25884	30756	30756	3768	4113	6336	17000	17000	57101	55637	55637
9.....	32472	37338	31650	4104	4668	6832	20400	20400	68476	66510	58442
10.....	35250	43902	31650	4650	5391	7336	22100	23800	74727	77743	58442
11.....	35250	50406	31650	4956	6114	7336	22100	27200	74727	88676	58442
12.....	35250	58080	31650	5418	6855	7336	22100	30600	74727	100953	58442
13.....	35250	66246	31650	5940	7755	7336	22100	34000	74727	113941	58442
14.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	118808	58442
15.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	117116	58442
20.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	109730	58442
30.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	100232	58442
40.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	92798	58442
50.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	91718	58442
60.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	91718	58442
65.....	35250	68490	31650	6468	8490	7336	22100	35360	74727	91718	58442

\* Supplied by other sources.

Note: Value of benefits is based on cost of power from alternative sources in each area. Utility loads in Vancouver and Kamloops areas—6 mills, Trail—3 mills, and Northern B.C.—8 mills.

Special industrial load 4 mills at Tidewater and 3 mills in the interior—averaged on basis of area consumption to 3.4 mills.

lowing table summarizes the position in so far as primary power and flood control values are concerned:

Primary Benefits vs Primary Costs\*

Programs	Benefits (A)	Costs (B)	Net Benefits (A-B)	Benefit- Cost Ratio (A/B)
	(\$Millions)	(\$Millions)	(\$Millions)	
Peace River.....	1,019	845	174	1.21
Columbia River....	1,363	1,097	266	1.24
Thermal Power....	763	601	162	1.27

\*No allowance has been made for inflation. If costs rise at a probable long-term rate of about 2% a year, the benefit-cost ratios for the Peace, Columbia and thermal plant programs all work out to about 1.0. A 4% inflation assumption would favor the Peace to an even greater extent and downgrade the thermal plant program still further.

Let us now give some thought to what the secondary and other benefits might amount to if the Peace River project were to go ahead immediately. Several thousand British Columbians who are now out of work might find jobs. By driving access roads and clearing transmission line rights-of-way, they might

help to establish several resource-based industries like mining and sawmilling. An abundant supply of low-cost power might also cause industrial complexes to be built for the processing of metals or the manufacture of electro-chemicals. If these activities would have taken place in other parts of the province in any case, they should be ignored. Only those which represent a net gain to the B.C. economy can properly be included under the heading of secondary benefits.

Opposite each benefit, if it qualifies, there is always a cost. Even then, the net advantage attributable to secondary activities, like the production of pulp and paper or the refining of metals, could amount to many millions of dollars a year. In the case of the Peace, I wouldn't be surprised to find that their present worth fell somewhere in the \$50 to \$100 million range.

The Columbia offers many of the same advantages. In total, they may not, however, be quite as large. A series of thermal plants may construe even fewer secondary and other indirect benefits on our provincial economy.

Table V. Estimated Program Costs\*

(assuming no inflation)

Year	Peace River Program		Columbia River Program <sup>1</sup>		Thermal Power Program	
	Cumulative Capital Investment	Total Annual Costs	Cumulative Capital Investment	Total Annual Costs	Cumulative Capital Investment	Total Annual Costs
	\$ Million	\$ Thousand	\$ Million	\$ Thousand	\$ Million	\$ Thousand
1.....	*	*	218.1	13,652	27.6	2,552
2.....	459.0	27,161	253.2	15,999	42.8	5,503
3.....	480.6	28,531	253.2	15,957	63.4	8,776
4.....	512.9	30,367	284.0	17,810	152.8	17,690
5.....	571.9	34,196	547.7	34,508	262.4	24,975
6.....	619.4	37,322	608.0	39,209	297.7	29,412
7.....	677.2	41,191	744.6	48,185	411.1	37,622
8.....	703.3	45,826	764.7	49,462	482.0	43,079
9.....	846.6	57,070	771.6	52,222	482.0	44,558
10.....	899.2	60,625	967.7	63,492	482.0	44,558
11.....	899.2	60,625	999.1	68,136	482.0	44,558
12.....	899.2	60,625	1204.6	79,413	482.0	44,558
13.....	899.2	60,625	1334.3	87,484	482.0	44,558
14.....	899.2	60,625	1335.8	90,071	482.0	44,558
15.....	899.2	60,625	1335.8	89,978	482.0	44,558
20.....	899.2	60,625	1335.8	89,532	482.0	44,558
30.....	899.2	60,625	1335.8	88,797	482.0	44,558
40.....	899.2	60,625	1335.8	88,233	482.0	44,558
50.....	899.2	60,625	1335.8	88,165	482.0	44,558
60.....	899.2	60,625	1335.8	88,165	482.0	44,558

\* Primary costs only. Figures include water taxes and royalties on the production of mineral fuels.

Note: <sup>1</sup> Including costs associated with provision of flood control facilities in Canada.



The following table attempts to summarize the over-all position we would reach if secondary benefits and costs attributed to the Peace, Columbia and thermal plant programs are included in our calculations:

Over-all Benefits vs Over-all Costs\*

Program	Benefits (A)	Costs (B)	Net Benefits (A-B)	Benefit- Cost Ratio (A/B)
	(\$Millions)	(\$Millions)	(\$Millions)	
Peace River.....	1,099	770	329	1.43
Columbia River...	1,403	1,047	356	1.34
Thermal Power...	783	576	207	1.36

\* Primary and Secondary Benefits and Costs only. No allowance has been made for "intangible" items, as these cannot be assessed in monetary terms. Secondary net benefits were tentatively estimated to be as follows: Peace, \$80 million; Columbia, \$40 million; and the Thermal Program, \$20 million. The net reduction in costs due to employment effects, was assumed to be: Peace, \$75 million; Columbia, \$50 million; and the Thermal Program, \$25 million.

In case you think we are getting to the point where a final decision can be made, let me urge you, instead, to be patient. A combination of high load factor Peace and several low load factor thermal plants may be better than any of the programs which we have looked at so far. Various carefully integrated Columbia-Thermal, Peace-Columbia, and Peace-Columbia-Thermal sequences should also be studied. The best array of projects, regardless of their character and location, should be chosen for development. It, and it alone, will be better than all the rest. Hundreds of millions of dollars are at stake and a painstaking review of all these possibilities, each embracing its own secondary and intangible values, can pay for itself over and over again.

Equally time consuming is the task of reviewing our assumptions. What would happen to the resulting benefit-cost ratios if higher load growth estimates were employed? Does this improve the case for the Peace River as opposed to the Columbia, or vice versa? Or does a series of thermal plants look better if the rate of growth in the demand for power slows

Table VI. Present Value of Primary Benefits and Costs

(In thousands of dollars)

Year	Peace River Program		Columbia River Program				Thermal Power Program	
	Total Benefits	Power Costs	Power Benefits	Flood Control Benefits	Total Benefits	Power Costs	Power Benefits	Power Costs
1.....	*	*	1,214	2,808	4,426	14,763	1,214	2,419
2.....	4,452	26,571	5,237	3,229	8,466	16,082	5,237	4,944
3.....	8,716	26,284	8,985	3,061	12,046	15,242	8,985	7,474
4.....	15,065	27,859	14,976	2,901	17,877	16,183	14,976	14,279
5.....	20,942	27,996	20,603	2,803	23,406	27,899	20,603	19,109
6.....	26,524	28,711	25,926	2,656	28,582	29,102	25,926	21,331
7.....	31,984	29,840	31,239	2,518	33,757	33,855	31,239	26,771
8.....	37,207	29,339	36,253	2,387	38,640	32,907	36,253	30,214
9.....	42,293	33,598	41,078	2,262	43,340	31,453	36,095	28,940
10.....	43,747	33,919	45,513	2,144	47,657	37,054	34,213	27,430
11.....	41,467	32,152	49,207	2,033	51,240	36,298	32,430	26,001
12.....	39,305	30,477	53,099	1,927	55,026	41,004	30,739	24,647
13.....	37,256	28,890	56,806	1,826	58,632	42,835	29,137	23,364
14.....	35,314	27,383	56,145	1,731	57,876	40,646	27,618	22,145
15.....	33,473	25,460	52,460	1,641	54,101	38,465	26,178	20,988
20.....	25,611	19,856	37,608	1,255	38,863	29,333	20,030	16,058
30.....	14,994	11,623	20,107	735	20,842	17,069	11,726	9,400
40.....	8,778	6,808	10,904	430	11,334	9,937	6,864	5,506
50.....	5,139	3,986	6,307	252	6,559	5,814		
60.....	3,008	2,335	3,692	148	3,840	3,406		
Cumulative Totals...	999,500	845,200	1,333,400	63,400	1,339,700	1,097,300	736,900	600,900
Fuel Replacement...	+19,800				+23,100		+26,300	
Total.....	1,019,300	845,200	1,333,400	63,400	1,362,800	1,097,300	763,200	600,900
BENEFIT/COST RATIOS.....		1.21				1.24		1.27

down? And what about interest rates? Higher money costs will undoubtedly hurt the capital-intensive hydroelectric programs and improve the relative economics of thermal power. So each of these extremes must be explored. Only after they have been checked out on a net benefit and benefit-cost ratio basis can we safely decide which program is best and which programs are no longer in the running.

Nothing has been said, so far, about the need for frequent checks of a financial nature. Periodically, throughout the analysis, each program should be studied from the point of view of financial self-sufficiency. Not only will this give some idea of the earning power of these investments (or the amount of subsidy required) but it can also shed some light on the "cost of money." A cash flow study might show, for example, that the raising of new capital funds would become so burdensome as to drive interest rates up. A few percentage points may be all that is necessary to disqualify one resource development program and shift the choice to another. Dur-

ing the course of my remarks, I have not alluded to the Peace or the Columbia River programs in this way. Yet, due to their great size and the difficulty of predicting future revenues from the sale of power, calculations of a financial nature must be included in any comprehensive appraisal of power benefits and costs in British Columbia.

The need for certain other disciplines should also be stressed. How far ahead, for example, can we really afford to plan? Market requirements can rarely be forecast with any degree of accuracy. Developments on the technological front, meanwhile, could strengthen the position of alternative sources of supply. And what about budgets? Surely our planning must be limited to programs which bear some resemblance to the projects which we already have in hand. This being the case, most agencies concentrate their attention on the next decade. To plan even further ahead takes courage. But, if it also involves large financial commitments, it may mean looking for trouble.

**Table VII. Benefit-Cost Ratios\***

(With no allowance for inflation)

	(1) Peace River Program		(2) Columbia River Program		(3) Thermal Program	
	Benefits	Costs	Benefits	Costs	Benefits	Costs
<i>Benefits:</i>						
(1) Firm Energy						
(a) Normal Load Growth—South B.C. Less Trail.....	484.9	.....	769.0	.....	459.7	.....
(b) Normal Load Growth—Trail.....	68.5	.....	97.0	.....	59.0	.....
(c) Normal Load Growth—Northern B.C.....	162.6	.....	.....	.....	.....	.....
(d) Special Industrial—Vancouver Area.....	133.4	.....	193.0	.....	102.7	.....
(e) Special Industrial—Interior B.C.....	150.1	.....	217.1	.....	115.5	.....
(2) Fuel Replacement Energy.....	19.8	.....	23.1	.....	26.3	.....
(3) Flood Control Benefit from U.S.A.....	.....	.....	63.6	.....	.....	.....
<i>Cost-Benefits:</i>						
(4) Government Charges—Water Taxes.....	39.4	39.4	48.8	48.8	.....	.....
<i>Costs:</i>						
(5) Investor Charges—Bond Interest and Depreciation....	.....	782.6	.....	999.3	.....	382.7
(6) Plant Charges.....	.....	62.6	.....	98.0	.....	218.2
	1,058.7	884.6	1,411.6	1,146.1	763.2	600.9
<b>BENEFIT-COST RATIOS (excluding water taxes).....</b>	1,019.3 ÷ 845.2 = 1.21		1,362.8 ÷ 1,097.3 = 1.24		763.2 ÷ 600.9 = 1.27	

\* All benefits and costs expressed in \$ millions, present valued to April 1, 1966 at 5.5%/year.

**Table VIII. Benefit-Cost Ratios\***  
(Including allowance for inflation of 2% year)

	(1) Peace River Program		(2) Columbia River Program		(3) Thermal Program	
	Benefits	Costs	Benefits	Costs	Benefits	Costs
<i>Benefits:</i>						
(1) Firm Energy:						
(a) Normal Load Growth—South B.C. Less Trail.....	484.9		769.0		459.7	
(b) Normal Load Growth—Trail.....	68.5		97.0		59.0	
(c) Normal Load Growth—Northern B.C.....	162.6					
(d) Special Industrial—Vancouver Area.....	133.4		193.0		102.7	
(e) Special Industrial—Interior B.C.....	150.1		217.1		115.5	
(2) Fuel Replacement Energy.....	19.8		23.1		24.7	
(3) Flood Control Benefit from U.S.A.....			63.6			
<i>Cost-Benefits:</i>						
(4) Government Charges—Water Taxes.....	39.4	39.4	48.8	48.8		
<i>Costs:</i>						
(5) Investor Charges—Bond Interest and Depreciation.....		909.5		1,233.9		450.2
(6) Plant Charges.....		107.4		153.2		344.6
	1,058.7	1,056.3	1,411.6	1,435.9	761.6	794.8
BENEFIT-COST RATIOS (excluding water taxes).....	1,019.3 ÷ 1,016.9 = 1.00		1,362.8 ÷ 1,387.1 = 0.98		761.6 ÷ 794.8 = 0.96	

\* All benefits and costs expressed in \$ millions, present valued at 5.3% to April 1, 1966.

**Table IX. Unit Cost of Power at Load Centers<sup>1</sup>**  
(A) WITH NO ALLOWANCE FOR INFLATION

Period	Peace River Program	Columbia River Program		Thermal Plant Program
		Without Flood Control Payments	With Flood Control Payments	
	(Mills/Kwh)	(Mills/Kwh)	(Mills/Kwh)	(Mills/Kwh)
to 1985.....	4.3	3.8	3.6	3.6
Lifetime Average.....	4.0	3.8	3.6	3.6

(B) WITH ALLOWANCE FOR INFLATION<sup>2</sup>

to 1985.....	5.0	4.6	4.4	4.6
Lifetime Average.....	4.8	4.8	4.6	4.8

<sup>1</sup> Water taxes are excluded in the case of the hydro developments. If they were added in the hydro unit prices would be raised by about 4% or around 0.2 mills.

<sup>2</sup> *Most probable circumstance*; i.e. construction and labor costs are assumed to rise at 2% per annum. Natural gas fuel is held constant at 2 mills/Kw or equivalent while the price of oil and coal is assumed to rise at 2% per year.



## Discussant (Mr. SCOTT)

### 1. *A Canadian manual?*

Mr. Spargo's paper in the background document provides an excellent summary of the existing benefit-cost literature. Most of this literature consists of official American documents arising out of the U.S. Flood Control Act of 1936. The best known document is the so-called Green Book which has become almost the Bible of practitioners of benefit-cost analysis. In recent years an academic literature has sprung up, and this has been augmented by a flood of United Nations documents on the subject. Therefore, the received doctrine on benefit-cost analysis springs mainly from American practice and reflects the point of view adopted by Americans in making some crucial decisions.

### 2. *The assumed U.S. viewpoint*

(a) The Green Book at page 6 tells us that there is to be a "comprehensive public viewpoint." At another place we are told that benefits and costs are to consist of "all project effects, beneficial or adverse, to whomsoever, they may accrue." It is quite clear that this viewpoint is the view from Washington, D.C., surveying the whole of the United States and taking the algebraic sum of gains and losses in the various parts of the United States; that is taking the net gains and losses regardless of their regional incidence.

(b) It is made clear in both the official and academic literature that intangible benefits are expected to be by-products rather than the main product of projects.

(c) The United States benefit-cost analysts have found it possible to ignore the "transformation" or developmental aspects of river basin development, as Professor Easterbrook called them yesterday. The U.S. benefit-cost ratio therefore does not depend on the outputs to be produced by other so far non-existent projects, or on the general pattern of the developmental effort.

(d) In the United States analyses are generally confined to water projects.

### 3. *How is Canada different?*

(a) In Canada the viewpoint is frequently provincial and even local. For one thing the provinces are autonomous; furthermore the provinces own their own resources. Therefore, the scope of Canadian analyses may properly be less comprehensive than those from a national viewpoint.

(b) In Canada intangible benefits may frequently be very important.

(c) In most large Canadian projects the developmental or transformation aspects are dominant. The

project serves as the first step in the opening up of a region or the development of a new industry. Consequently prediction of value, load or traffic may be much more subjective than where, as often in the United States, the project fits into an already-developed economy.

(d) In Canada benefit-cost analysis may be used for resource conflicts involving forestry, mining, recreation and agriculture, not just for water uses.

We may conclude from this list of differences between Canadian and American viewpoints that Canadian planners need a manual taking account of peculiarly Canadian circumstances. (It should also be pointed out that Canadians have a good deal to learn from other countries, such as France and perhaps the Soviet Union, where still other planning and programming methods are in use).

### 4. *The aim is all-important*

Before the benefit-cost analysis is begun it must be made clear what level of government is sponsoring the analysis. The following examples suggest that different aims may dictate that different criteria be used:

(a) If the aim is to provide a particular service the projects with the highest benefit-cost ratio should be sought. The same applies to any "competitive" situation where, for example, the same funds may be used to provide different services.

(b) If the aim is to develop a region the project which achieves this aim and yet has the highest benefit-cost ratio should be sought. Regional development therefore is a side condition.

(c) If, however, the aim is to fully develop a particular site in conditions where labor and capital can fairly easily be obtained, the criterion should be to continue elaborating the project on this site until the incremental benefit-cost ratio has fallen to 1:1.

(d) If the aim is to give employment to otherwise unemployed labor the benefit-cost calculation should be modified in two ways. First the cost should be reduced to the extent that the labor force may be considered to be free. Second, the project which gives the highest benefit-cost ratio subject to the desired amount of employment being provided (as a side condition) should be chosen.

### 6. *The relevance of the viewpoint to the handling of difficult problems*

There are four problems which frequently puzzle those conducting benefit-cost analyses. Much of the difficulty disappears once the analyst understands the viewpoint of the authority for whom he is conducting the evaluation.

*(a) Secondary benefits*

These are gains in wages, rent or profit received by enterprises at a second or third remove from the project itself. Usually they use the product of the project, which is provided in greater quantity or at lower cost. The question arises whether, in view of the fact that these benefits are notoriously difficult to measure, they may be neglected.

If the analysis is conducted from a national viewpoint they may be neglected when it is expected that such secondary benefits would ultimately be provided by some project, even if not the one that is being examined. However, if the project is competing with projects that would provide different services then the secondary benefits of each should be measured and taken into account alongside its primary benefits.

If, however, the analysis is conducted from a provincial or a local viewpoint it is necessary to inquire whether the secondary benefits accrue within the territory of that authority. If they do, they are probably just as important as the direct benefits, or perhaps even more important.

*(b) Taxes*

As John Davis has said in his lead-off paper, taxes which are paid within the territory of the authority responsible for the project are merely transfers and need not be considered in the analysis. Hence, a national analysis can disregard all tax payments. On the other hand, a local evaluation must regard taxes paid to governments outside its jurisdiction as costs, to be entered as such in the benefit-cost analysis.

Once again it goes without saying that all projects to be compared from any one viewpoint must be treated in the same way so far as taxes are concerned.

*(c) Employment effects*

It is difficult to know how to handle projects that are to be constructed in areas where there is less than full employment. Frequently, however, the problem is simplified when the viewpoint of the authority is fully understood.

For example, a local authority must pay the full wage cost of the labor force to be used in its project. The labor is probably brought from outside and becomes a real burden to the local community. However, from a national viewpoint the use of such labor, if otherwise unemployed, may involve no sacrifice of goods or services even though cash wages have to be paid.

Once again it must be pointed out that all projects being compared must be treated in the same way so far as cost is concerned. If it is believed that

labor is free for one of them it must be regarded as being free for all of them.

*(d) Interest rates*

The adoption of the correct viewpoint helps to determine which is the appropriate rate of interest to be used in benefit-cost calculations. The appropriate rate is that which measures the alternative opportunities of that government. Depending on circumstances it may be either the rate at which the government borrows, or the rate which represents the return on alternative projects open to that government or to its taxpayers.

Whichever interest rate is used however, the same rate must be used for all projects being compared.

It can be seen, therefore, that the choice of projects competing for funds, or competing for the use of a site, or competing to provide a service, may be very strongly influenced by the viewpoint adopted. It is well known that the decision about the including of secondary benefits, the treatment of taxes, the adjustment for unemployment and the selection of an interest rate can make or break a project proposal. I have argued here that once the viewpoint of the sponsoring authority is fully understood the selection of these governing variables follows fairly automatically.

*7. Conclusion*

It is generally agreed that benefit-cost analysis is a tool like double-entry bookkeeping, which can be used for the furthering of a variety of purposes. In itself it is neutral, and is not designed to achieve one objective rather than another. It follows, therefore, that the analyst using benefit-cost tools must have clearly in mind the aims of the authority undertaking the project or program under examination. The objectives may be merely the efficient use of resources, labor and capital, or they may be much more complicated involving the first steps in the development of a whole region, the giving of employment to an immobile labor force, or the utilization of a particular site. Each of these aims determines the use of a particular resource and the appropriate values for labor costs, taxation, interest rates and secondary benefits, in a benefit-cost analysis.

It cannot be overstressed that in Canada it is probable that any particular project may be examined from a viewpoint that is properly different from that of the nation as a whole. Of course, it is to be hoped that where these viewpoints conflict, methods of liaison and co-ordination will be found that will lead to the adoption of projects useful both to the local community and to the maximization of the national income.

## Discussant (Mr. BAKER)

### 1. Applications of benefit-cost analysis

The other discussion leaders have referred to problems which arise in applying benefit-cost analysis as an aid to systematic decision making. They have set out clearly the principles which must be recognized.

We can now look at some of the problems which have arisen from failure to apply such analysis. The magnitudes of potential savings creditable to systematic analysis illustrate the importance of quality as well as principle in analysis.

### 2. Recognition of side effects

(a) When the Niagara section of the Queen Elizabeth Highway was built it had the effect of raising accessible land to a value of \$2,000 per acre. But fruit land was already worth \$1,000 per acre as against \$200 per acre for general farming land above the Escarpment. Consideration of routes might have recognized the potential increment of \$800 per acre were it not for budgetary and jurisdictional limits applicable to highway planners.

(b) When the Spadina Expressway in Toronto was surveyed over ten years ago, provision was made for purchase of land severances without allowance for depreciation side effects. A proposal to purchase by entires was refused as unauthorized. The end result of opposition and delay was an increase in cost of perhaps \$10 million due to neglect of side effects.

(c) When Ontario Hydro was given planning responsibility for the north side of the St. Lawrence Seaway project, its jurisdiction was limited to five miles from shore, not because magnetic side effects were thus limited but because it was not equitable to charge regional planning to hydro consumers only.

### 3. Recognition of alternatives: conservation authority plans

(a) Recreation benefits arising from multi-purpose dams proposed by the Metro Toronto Conservation Authority were theoretically set at \$25,000 per acre with the total acreage included in their analysis at over \$20 million benefit. The Benefit-Cost Analysis Handbook reflects simple logic with its widely accepted principle that an allocated benefit cannot exceed the least costly alternative. Since natural lake-park sites were still available at only \$500 per acre, the gross recreation benefit should have been recognized at around \$500,000 even though that would have exhibited a negative benefit-cost ratio. This is an example of inadequate fact reporting as well as neglect of analytic principle.

(b) Similarly, the dilution of pollution in the Humber River ceased to have importance in the dam

program when the decision was made to pipe sewage directly to treatment plants.

(c) Again, the benefit of protecting human life should have been limited in the analysis to something around \$20,000 representing the least costly alternative of a practical flood-warning system instead of being dealt with as an intangible justifying million-dollar dams.

(d) The wording of the Canada Water Conservation Act might be construed to limit federal aid for flood damage to those property owners who happen to live below a suitable damsite. Apart from being obvious discrimination, this is bad legislation if it increases economic costs to the country by ignoring cheaper alternatives.

In the short narrow valleys of Metropolitan Toronto, the cost of evacuation is less than the cost of protection, particularly if floodway easements are purchased instead of full land title. In the latter case, the residual land title could be acquired by local recreation interests.

However, there is another alternative which may be still cheaper. A federal flood-damage emergency fund would be a mobile benefit immediately available to assist a flooded area anywhere in Canada.

### 4. Significance of secondary effects

Though some secondary effects affect the national wealth, others are significant only at the local decision-making level. For example, an irrigation project may give local benefits by attracting processing plants which otherwise might have been built elsewhere. Again, the purchase of gravel and on-site supplies is a local benefit. This illustrates that each analysis must be directed to one specific decision maker. Variations in benefit-cost ratios which include assessments of secondary effects may be helpful in negotiations for cost sharing among units of government.

### 5. Significance of intangibles

The first duty of benefit-cost analysis is to recognize all factors. Then economic alternatives should be appraised and, where appropriate, their effects summarized as a ratio. This includes many recreation and other elements which at first sight appear intangible. However, public opinion is an intangible factor which should be kept out of the reported ratio because it is relatively unstable; this is the proper precinct of the politician rather than the economic analyst. The competent economic analyst will, however, supply the politician with material for re-education of the public for their own good.

### 6. Summary

If we "take our own medicine" and compare benefits with costs of analysis we find costs should be



about one-half of one per cent, divided between fact-finding and fees. While inadequate analysis may do no better than the alternative of personal judgment by a responsible and competent decision maker, expert consultants may easily save ten per cent of the possible capital cost. If fees ranged from one-eighth to one-quarter of one percent the benefit-cost ratio of the best analysis could then be 40:1 and the

incremental ratio 80:1. This is a mathematical way of illustrating the adage that the best brains are the cheapest.

What we need now is a guidebook—such as the one prepared for discussion at this Conference—and a model analysis worked out by a team of experts from various disciplines—such as engineers, economists, geographers, and administrators.

## DISCUSSION

The discussions in the Workshop centered on two main topics:

- (a) The usefulness of benefit-cost analysis as a tool in decision making; and
- (b) The need for a set of standards to provide guidelines for those carrying out the analysis.

There was general agreement that benefit-cost analysis is a basically useful tool in project evaluation. While it has certain limitations and is sometimes difficult to apply, it is, nevertheless, an objective approach to the selection of projects. It was emphasized that benefit-cost analysis should be regarded only as a tool to be used in the decision-making process but not as a substitute for that process. Other factors, such as political objectives which are not taken into account in the analysis, must be considered before decisions can be made.

Benefit-cost analysis is concerned with the evaluation of means of achieving given ends. It is not concerned with the evaluation of the ends themselves. It was suggested by some that benefit-cost analysis should be confined to projects providing similar services. It was pointed out, however, that economic analysis provides a means of comparing not only projects of a similar kind but also projects providing different services.

The viewpoint from which the analysis is carried out is especially important. Analyses may incorporate local, provincial, regional, or national viewpoints and they may reflect either public or private viewpoints. The facts taken into account in the analysis, however, differ according to the viewpoint. Accordingly, it is not possible to compare the results of analyses carried out from differing viewpoints. It is essential, therefore, that the viewpoint should be clearly stated at the outset of the analysis.

Two of the particularly difficult problems of the analysis are those of taking into account secondary effects and intangibles. Secondary effects are more important in some projects than in others. Usually they are more important at the local level than at the national level. At the local level they are more easily identified and measured. At the national level

however, it can usually be assumed that secondary effects are offset somewhere in the economy. Where secondary effects are expected to be particularly great, they should be taken into account and included in the analysis.

Intangible effects are those effects of a project that are not readily expressed in monetary terms. Such effects are often of critical importance in decisions as to whether or not a project should be built. It was generally agreed that where intangible effects are of great importance, they should be taken into account in the analysis.

The results of the analysis may be expressed in the form of a benefit-cost ratio. It must be remembered, however, that this ratio is a measure of relative merit, and not absolute merit. The fact that a project has a 3:1 benefit-cost ratio has meaning only when related to other projects competing for development. Since intangibles cannot be taken into account in the benefit-cost ratio, a qualitative statement should be added to the results of the analysis. It was suggested that there are various statistical techniques available which will help to refine the procedures of benefit-cost analysis. As yet, these refined techniques have not been adopted, but thought is being given to the uses which could be made of them. Meanwhile, however, the aim is to provide a framework within which the analysis can be carried out.

Mr. L. V. Brandon suggested that attention should be given to the possibilities of dynamic programming as a technique of analysis and asked that the following prepared statement on this point be included in the record:

### *Developing quantitative techniques*

I am surprised that the problem of benefit-cost analysis has not been referred to the mathematician. He can treat the matter statistically, using such techniques as the theory of games, to program a high-speed digital computer to obtain optimum solutions for various model equations, the equations being devised by himself for various situations and being based on quantitative values of cost, interest, horse-

power, storage, employment, etc. Obviously the validity of any solutions derived depends on the accuracy of data given the computer, but only a computer can in reasonable length of time make enough trial calculations to provide an answer.

The matter of making decisions in the face of uncertainties is constantly being developed in mathematical literature, and mathematical methods are used to solve many problems; e.g., the best move in a game of chess. These methods are used widely by strategists to determine the consequences of many military manoeuvres.

The application of techniques known as dynamic

programming are in use in California and Israel to resolve various multi-purpose watershed problems and hydrologic matters.

I suggest that the authors of a Canadian text on benefit-cost, if to be produced, refer to a textbook by R. Bellman, *Dynamic Programming 1957*, Princeton University Press, and to papers in various geophysical and agricultural engineering journals by W. A. Hall and N. Buras.

Furthermore, I recommend that a mathematician be retained to consider this problem and that the resources of a high-speed digital computer be made available to him and his team.

## WATER WORKSHOP B

Friday, October 27

The second session of the Water Workshop B was devoted to a detailed consideration of the draft Benefit-Cost Analysis Handbook that had been prepared for the "Resources for Tomorrow" Conference by a group of four authors. It was generally agreed that the preparation of the handbook was a major step in stimulating thinking on the problems of economic evaluation of resource-development projects, and that a document is urgently required which sets out principles of benefit-cost analysis and pro-

cedures which can be generally applied in the evaluation of projects in different parts of Canada. The Workshop recommended that the Steering Committee give consideration to the immediate publication of a "Guide to Benefit-Cost Analysis." It was suggested that this guide be based on the draft handbook prepared for the Conference and should incorporate suggestions which arose in the decisions at the Workshop. It was further proposed that the document be published in both French and English.





# Water Workshop C

TUESDAY, October 24

## Achieving effective pollution control.

- Chairman: J. W. T. SPINKS, President, University of Saskatchewan.
- Co-Chairman: JOHN S. BATES, Chairman, New Brunswick Water Authority.
- Panel: A. E. BERRY, General Manager, Ontario Water Resources Commission.  
A. L. VAN LUVEN, Chairman, E.I.C.—C.I.S.S., Joint Committee on the Use, Conservation and Pollution-Control of Water Resources.  
R. J. HULL, President, Cities Service Oil Company Limited.  
GUSTAVE PRÉVOST, Chairman, Water Purification Board, Province of Quebec.
- Rapporteurs: J. P. GOURDEAU, Consultant Engineer, Montreal.  
D. R. WALKINSHAW, Q.C., Ontario Conservation Council.

### Chairman (Mr. SPINKS)

It might be pointed out that concurrent Workshops A and B are being held to consider organizational and jurisdictional aspects and economic aspects of water development. The purpose of Workshop C is to consider the organizational, jurisdictional, economic and general technical considerations as they focus on a particular problem, namely, that of achieving effective pollution control. Detailed technical discussion is to be avoided.

Because water is such an intimate part of our daily lives, most of us give little thought to it. But few problems are more important than the supply of clean water. It is essential to life, to agriculture, to industry and to the conservation of many of our natural resources. And yet day by day, as our standard of living rises, we see our supplies of water becoming dirtier and dirtier!

Pollution in its widest sense may take a variety of forms. It may be the result of excessive silting of rivers, of natural or man-made origin; the flushing of fuel tanks by vessels; the presence of sawmill residue, bark, and logs resulting from forestry operations; municipal wastes; the discharge of chemical effluents; the discharge of effluents at high temperatures, etc.

Pollution control, however, must be related to the effect of pollution, and to the location and time at which pollution occurs. For example, certain forms of pollution may not have serious effects,

particularly in relation to further use; the same quality and quantity of material discharged into a river in a settled area as in a remote area is generally held to be more harmful in the settled area than in the remote area; the capacity of rivers to handle a constant volume of pollution is reduced during times of low flows and when there is ice cover.

Why should we be concerned about pollution? After all, the discharge of wastes into rivers, streams, and lakes is probably many times cheaper than any alternative method, and these alternatives—burying, burning, and transporting wastes to selected areas—are not really effective in handling the quantity and kind of wastes which are involved.

Basically, we are concerned about the effects of pollution. Briefly these effects are:

1. Effect on human life and health—fatal and contagious diseases, infections;
2. Effect on other forms of animal life—fish losses through poisoning or oxygen depletion, fostering of less desirable species, waterfowl destruction and destruction of habitat;
3. Non-fatal effects on water for domestic purposes—taints, odors, coloring;
4. Effect on use for further industrial purposes;
5. Effect on persons living in close proximity to polluted waters—owners of homes and cottages—and on the use of beaches, surface waters, and fish and wildlife for recreation purposes.

A sound and effective program of pollution control must be related to economics. It must also be related to jurisdiction, particularly in the case of pollution of interprovincial waters and where divided jurisdiction over uses exists. The problems of organization also appear in devising effective pollution control. Traditionally these problems have been largely a matter for local municipal concern, except where health aspects are concerned. It is becoming recognized, however, that a wider basis of planning for pollution control is required—often involving several municipal governments and the provincial government. The role of industry in pollution abatement must be established and reflected in the organizational framework. The fact that another province and/or the federal government may be involved also affects the character of the organizational arrangements required to deal with pollution. It is perhaps worth commenting that a great deal of the work on pollution has been done by experts or medical people and the suggested cures have followed the general lines of structure and sanitation. Possibly this is taking a negative approach and a more logical approach might be to consider water-use from biological, chemical and engineering viewpoints with pollution control in the subsidiary role of curing abuses.

If a problem exists and is of such magnitude that action would be taken by a provincial government, then it should be treated with the same degree of seriousness when two or more jurisdictions are involved. In other words, a number of jurisdictions exist in Canada, and problems in working out organizational arrangements should not be used as excuses for inaction and delay.

#### **Co-Chairman (Mr. BATES)**

There are four aspects of pollution for this Workshop to study: quality; organization; human nature; and practice. We must take a positive approach and clean up the water, and not set stream classification standards which actually downgrade the water. It is necessary to avoid the danger of too much technology. This Workshop should look at the problem from a practical viewpoint and come up with a solution to the problem of pollution. It is probable that the answer may be the formation of a national organization.

#### **Panel Member (Mr. HULL)**

##### **1. The problems**

At the outset, I would like to establish that I am not an authority on water pollution control. And so as a layman on this topic I will restrict myself to discussing two general areas which I, and my company, have encountered. The first is industrial use of water. The second is public apathy.

In my opinion, the main problems with industrial pollution at the present time are twofold. There is the complexity of the situation on the one hand, and on the other the refusal of a small number of businessmen to accept the reality of the situation. By complexity I mean that the problem cannot be solved by harsh legislation as some people are suggesting. The facts of economics do play an important part in the cleaning up of industrial pollution. The problem is compounded by historical and geographic factors. In the past, Canadian businessmen, as well as municipal authorities I might stress, had at their disposal huge amounts of water with very little industry and a small population. How would they know that the time would come when nature would not be adequate to handle their pollution problems? Now they must be given time and encouragement to adjust to the new set of conditions.

Geographically, industry is faced with the necessity for cheap transportation, proximity to large markets and the vast thirst of modern industry for water. For these and other reasons industry has tended to concentrate in small areas of this country and especially near waterways. Hence the possibility of pollution is gravely heightened in certain highly industrialized communities.

But the economic factor is still foremost. It is the real circumstance which halts most industries from cleaning up their pollution immediately. Here we must differentiate between old and new businesses. I cannot see why any new industry should be allowed to go into operation without including adequate pollution controls at the beginning when costs are not as prohibitive. Today these controls must be considered an integral part of the operation of the production line. However, for older industries, with entrenched plants, the task of conducting research on their pollution potential, designing an effective plant, finding a location for it and realigning their water treatment and effluent disposal is often exorbitant. It can easily cost in the millions of dollars and few businesses can afford this expenditure of capital unless it is spread over a number of years.

Finally, however, there is a small number of businessmen who refuse to accept the facts of the situation and their responsibility to their neighbors and their community. They must obviously be dealt with in a determined fashion—the same way we would deal with a private citizen who is harming his neighbors. However, I think they are few and far between.

Now an equally great problem, in my estimation, is public apathy. Without public support you cannot have legislation or funds for local projects. Worse still, the individual public is responsible for creating a great deal of pollution through its own carelessness. For instance, I was told of a boat trip by a

political group in the harbor of a major city where the members were observed throwing huge empty cartons from their refreshments overboard along with cups, wrappers and unused food. And yet these politically conscious people are just the ones who will get up on their hind legs and scream whenever an industry is accused of polluting. The problem of pollution cannot be left to the so-called "eggheads"—the conservationists and engineers. Pollution is everyone's problem.

The general public, as well as business leaders must be made to realize that if concerted steps are not taken immediately we will soon be faced with:

- (a) Chronic water shortages;
- (b) A much higher cost for clean water;
- (c) Depressed communities which will wither away because industry cannot settle in them due to lack of water supplies;
- (d) The complete spoiling of our outdoor recreation areas and the attendant loss of aesthetic values; and
- (e) A much higher cost of living and production.

Also there is the current heavy use of chemicals and products such as detergents and insecticides that throw off the balance of nature. I am at a loss to understand why such products are put into mass consumption without previous testing to determine all the effects they may have on our communities.

Finally, in my limited contact with the pollution problem it has become quite obvious to me that two other factors are basic. Water flow and pollution know no political boundaries and it is obvious that we must establish both nationally and internationally integrated programs if we are to make real progress in the pollution battle.

## 2. The solutions

In discussing the solutions to Canada's pollution problems, I would again like to deal primarily with the two areas which we have encountered in my company—industrial controls and education of the general public.

It is my opinion that what is needed in dealing with the industrial problem is encouragement rather than outraged demands, co-operation rather than legislation and education rather than controls.

By encouragement and co-operation I mean that community, municipal and provincial authorities should spend some time with their industries to assess their problems and then work out a program of co-operative action. Actual methods might be tax incentives on the construction of plants and pooling of research and planning activities. A further possibility is created in communities where there is one major industry. Why could not the industry and the community join together to provide adequate sewage

and water treatment facilities for both, thus reducing costs to both.

In the case of new industries it is imperative for authorities to let the management know, well in advance, what standards of pollution control will be expected of them so that the costs may be added into the planned capital expenditure as a basic expense.

The time should come when all business and industry regard pollution controls as a basic cost of production. This cannot be done immediately because the current volume of international trade is an increasingly important factor and we might price ourselves out of the world market, if such controls were established too abruptly.

However, if I may interject here, to carry this thought to its logical conclusion, it seems that at present our water supplies are not priced realistically at all. If water must be pure to be usable, then it stands to reason the expense of making the water pure is logically part of the cost of water. When we pay for our supply of water we should also be paying for its treatment and purification. Perhaps in the future the public can be made to agree that this is the logical course of action and then the expense of sewage and pollution control will be spread over the widest possible area with the least amount of direct financial pain to any one group at any one time.

Going back to industry, I might cite as an encouragement to others the example of my company's refinery in Trafalgar. We have now been in operation for three years and I think we can make a fair assessment of our water purification program there. I can state very simply that in the long run, our early planning has saved us money; that the public relations value and community respect we have gained is inestimable; and finally, but by no means least, we have gained a great deal of personal satisfaction and pride.

Now, not to be forgotten is the education of management. By this I mean that there is a great deal of work, research and development being carried out by government laboratories. They also have access to work done by private groups and industry. As centralized agencies get this information they must take active steps to promulgate advancements in technology and cost reductions to the business community at large. They might also educate businessmen to the fact that by refusing to do their share, they are only encouraging and speeding up the eventual government controls.

I cannot help saying that with regard to many of my suggestions the work of our panel colleague, Dr. Berry, and the Ontario Water Resources Commission cannot be underestimated. They have worked hard and well to assist industry. They have at their



command tough legislation and the means of enforcing it. But it appears they have used their power judiciously and with restraint, keeping well in their sight the facts dictated by economics. Where industry has co-operated they have been all too happy to co-operate. I would suggest that authorities such as Dr. Berry's should be created in every province and that they be given adequate funds, personnel and research materials to do a first class job. In addition, some method must be created to allow the provincial bodies to work together and also with the various states which border them.

Another great area for solving our problem is the creation of public interest. Again my company has had the pleasure of taking a small role in this program as part of its public relations and advertising policy and all reports indicate success in stimulating numbers of citizens. But it is only a small start. What is needed is a determined, concentrated information program by all interested government bodies and private organizations such as conservation, naturalist and hunting and fishing clubs. It will take movies, literature, speakers, posters and any other form of communication which is available. The participation of the media should be enlisted in one all-out program at the height of the next hot, dry season when pollution problems are at their worst.

The place where the most education should be done is in its normal home—the schools. Children must be taught the value of their resources, especially water resources. Teachers and parents should take an interest in teaching everything from the nature of the water cycle to not throwing rubbish in our waters. As a result, future generations will grow up more conservation minded, instinctively prepared to support the safeguarding of our priceless water resources.

#### **Panel Member (Mr. VAN LUVEN)**

Early in 1961, our committee, under the joint sponsorship of the Engineering Institute of Canada and the Canadian Institute on Sewage and Sanitation, sent a questionnaire to 388 national and provincial organizations in Canada. It contained 113 questions that dealt with a great many aspects of our national water resource problems.

In brief, the objectives were:

1. To become acquainted with the work being done by each of the many organizations in this work;
2. To compile a list of research projects that should go forward;  
and
3. To suggest a possible program for government action that would be reasonable for all parties

concerned, having first determined the possible reaction of the interested groups to our suggestions.

It is emphasized that our committee expressly desires to provide an objective, scientific and unbiased analysis of the use, conservation and pollution control of water resources in Canada, which could be used by the various governments in Canada, as a comparison with their own work. To date there have been 150 very informative replies and about 50 others. More detailed studies will be done, and at this time we wish to avoid compromising our final report.

One of our most important questions was as follows:

Do you have definite ideas on what part each of the following groups should play in protecting our water resources? By protection, we mean conservation measures, sewage treatment, etc. In your reply, you may wish to comment on the relationship between ownership, control, policing, guidance and management of essential national resources:

- (a) Government of Canada,
- (b) Provincial government,
- (c) Municipal government,
- (d) Industry.

#### *Government of Canada*

In reply, many expressed the opinion that the federal government should conduct extensive research programs, make known the general magnitude of the problems, lay down the general plan of attack, set up broad policies, provide minimum pollution-control standards, enact enabling legislation that might be complemented by provincial statutes, and provide assistance in financing.

Many expressed the view that there should be a national organization and that this step would contribute a great deal toward our national economic stability.

There was a considerable expression of informed opinion on the need for co-ordination of the activities of the many organizations in these resource fields.

Some informed thinkers declared themselves to be in favor of having more uniformity in the regulations that are adopted by each of the provinces.

It seemed to be generally agreed that there is need for a greater direct interest in water resources on the part of the Government of Canada.

One scientific organization expressed, quite firmly, the view that there must be a great deal more co-ordination and research if the problems of this vast complex region are to be dealt with adequately on both sides of the international boundary.

#### *Provincial governments*

Many thought that the provincial governments should set up local policy, provide adequate legisla-

tion, support joint federal-provincial advisory and investigatory committees, and enact legislation that could complement the basic federal statute once basic pollution-control measures are evaluated.

Many felt that the provinces should be the controlling body, and a great many praised the work and methods of the Ontario Water Resources Commission.

### *Municipal governments*

Many thought that the municipal governments should set up their own bylaws with regard to sewage and other matters that affect resources, having their bylaws comply with the standards provided by senior governments, and police these bylaws.

Many thought that the municipalities should be subject to inspection by provincial authorities.

It was generally expressed that municipal governments must be fully aware of their responsibility to downstream users and their need to co-operate with surrounding municipalities in the economical solution of common problems of water supply and waste disposal.

Some thought that municipal governments have a definite responsibility to control their areas properly by town planning and zoning and industrial development programming.

### *Industrial*

It was generally agreed that industry must be aware of its responsibility to treat, or pay for the treatment of its effluents (solids, liquid and gas), and meet reasonable, equitable standards. It was also agreed that industries must state their requirements, for a reasonable future period, of all natural resources, especially water, both in regard to quality and quantity.

Many stated that conservation concepts should be actively pursued by all industrial organizations.

Some suggested that governmental support of research might do a great deal to aid industrial pollution control.

Some thought that industries have a definite responsibility to help in forming and supporting municipal-industrial organizations that will work toward solving water resource problems.

### *Summary*

The survey showed the willingness of industry to co-operate. Many groups advocate a federal agency for co-ordinating all resources ideas, especially research, from coast to coast. It seems clear that industry would have no objection to much tougher policies or even to surcharge systems in municipal sewer

systems, if equitable, and on a country-wide basis, provided industries are not placed in a non-competitive position.

The survey also pointed to the need for greater uniformity in our water rights laws and better understanding of the hydrology of water resources. Most groups agreed to using some of the waste-assimilation capacity of streams, provided this is done with a full appreciation of the broad social needs of the public and in full recognition of sound long-range economic principles.

The survey also shows that there seems to be a well-recognized need for research. Many groups advocate the formation of a national advisory council and some think that there should be a declared national water policy. Other suggestions for improvement were: formation of a model water-use Act; co-ordination of all fundamental principles; and adoption of effluent and stream standards (or objectives) properly formulated and co-ordinated.

### *Panel Member (Mr. PRÉVOST)\**

The classification of rivers, such as for drinking purposes, bathing, angling, domestic or industrial purposes is not too practical in a country which is in a stage of active development such as our own, since this would arouse many sharp differences of opinion and lead to frequent switches of classification. Moreover, it could contribute to greater pollution, since the parties concerned might have a tendency to keep their sewage treatment close to the permissible amount, when very often they could do better.

There is no justification whatsoever to consider our receiving waters as the first step in the treatment of sewage.

The capacity of the receiving waters should only be considered after all the adequate sewage treatments have taken place. A maximum permissible concentration of waste elements should be established independently of the volume of the receiving waters. However, a permissible maximum total amount of waste produced by all parties involved will have to be determined in relation to the minimum flow of the river. This will determine the ultimate capacity of the receiving waters. When it has been attained, no new development should take place unless there is some improvement in the methods of water purification.

It is indispensable for the provinces to follow the same policy everywhere. However, if no over-all agreement can be arrived at, then the stricter regulations advocated should prevail.

\* Translated from French.

## DISCUSSION

In the discussion that followed the presentations by panel members, it was mentioned that Quebec was the only province to grant direct subsidies to the municipalities for sewage treatment facilities. New Brunswick has a formula by which the equivalent of 35 per cent of the carrying charge is assumed by the province. The other provinces guarantee the necessary loan, but do not aid financially.

It was also mentioned that the Quebec Purification Board was adopting a standard of treatment, rather than a standard of effluent. This was considered to be a unique approach. The natural capacity of the receiving water to assimilate waste should be considered only after an adequate method of treatment has been utilized.

Permits are required by industries before they can discharge wastes in British Columbia, Manitoba and New Brunswick. Ontario does not issue such a permit.

The following points were emphasized:

1. Effluent standards must be used, rather than stream classification;
2. Industry, when using municipal sewage disposal facilities, must bear its share of the cost;
3. Public education is needed before standards can be set and enforced; and
4. Quality objectives are advisable for the receiving body of water, and such objectives should be related to local conditions and uses.

## WATER WORKSHOP C

Friday, October 27

Following further discussion, the water pollution control Workshop made the following recommendations:

1. *To the government of the Dominion of Canada*

(a) We wholeheartedly endorse the setting up of a "National Resources Council" as recommended by the Prime Minister.

(b) That a water pollution control division be included in the "National Resources Council" composed of representatives from the eleven governments.

This division should be empowered to:

- (i) Institute research programs;
- (ii) Collect, collate and analyze water pollution control data from this and other countries; and
- (iii) Co-ordinate water pollution control objectives for the eleven governments.

(c) That the "National Resources Council" study water pollution control problems of a national character.

2. *To the governments of the ten provinces, the Yukon and the Northwest Territories*

(a) Each of these political units that has not done so, should pass legislation setting up a water pollution control authority empowered to control and abate water pollution.

(b) The duties and powers of water pollution control authorities in each of the political units should include the following:

- (i) The study and analysis of individual water pollution problems in order to adopt a co-operative program to control pollution;
- (ii) The requirements that all new industry, municipalities and persons shall incorporate in their plans a method of controlling pollution; and
- (iii) The duty of promoting and developing educational programs at all levels on water conservation and pollution control.

(c) In these political units it is recommended that all matters relating to water pollution control shall be referred to the water pollution control authority.



# RECREATION

Tuesday, October 24 and

Friday, October 27, 1961

"The fundamental question to be answered in terms of the development of recreation resources is *development for whom?* Are our recreation resources viewed primarily as an economic asset? Are they developed primarily in terms of potential dollar return? Does exclusiveness of use further national goals? Is recreation a secondary issue, an additional benefit accruing from development based on other considerations? Does development primarily for recreation use have a low priority with our governments? Is such development related specifically to Canadian needs and aspirations? Does the pattern of development frequently represent arrested cultural growth in Canada? Indeed, at the municipal, provincial and dominion levels of government is there any over-all policy governing the development and use of our recreation resources?"

# Introduction

At planning conferences of the leadership groups of the two Recreation Workshops, it was established that Workshop A would confine its deliberations as much as possible to physical resources only, and that Workshop B would deal with programming.

Although both Workshops met separately for planning and discussion, there was general agreement on fundamental conclusions concerning problems in both sectors, and the approach to a solution to the problems.

Workshop A established that recreation is a legitimate form of land use, as are other uses such as agriculture, forestry and wildlife; that the multiple-use theory should govern decisions in land use claims, subject to the theory of prior use; that physical, mental and spiritual recreation needs form the total essential to Canadians. Fundamental research programs, the Workshop concluded, must be initiated immediately under federal and provincial auspices. Administrative, jurisdictional and educational guide-lines were established to some extent.

Workshop B established that the demand for and use of natural resources for recreation have grown and will grow; that a lack of intercommunication and over-all purpose in the administration of recreation leads to a need for study and for overhauling organization; and that there is a difference of approach and opinion between those who are primarily engaged in recreation programs and those whose responsibility is essentially that of conservation of resources, but that these differing viewpoints can be resolved by such meetings as this Conference.

During the week, it became apparent that recreational aspects of resource development were of concern to other workshops and to the Conference

as a whole. The following quotations are typical of the general awareness of recreational demands upon Canada's resources.

At a panel discussion on *Income and Employment Effects of Renewable Resource Development*, J. A. Roberts, Deputy Minister of the Department of Trade and Commerce, commented:

"Industrial research may have less impact in some resource sectors, but any reference to co-ordination and administrative problems brings to the fore questions of the multiple uses of water and land, and the whole field of wildlife and wilderness conservation and the related industries of recreation and tourism. Canada's potential in these directions both for Canadians at home and visitors from abroad is only becoming apparent.

"Aside from the intrinsic values to be conserved, we have here one of our real growth industries."

On the same panel, W. R. Dymond, Assistant Deputy Minister of Labour, said:

"As far as tourism is concerned, although statistics showed that foreign visitors spent \$420 million in Canada in 1960, it has been estimated that Canadians themselves are the most important tourist customers, and that they comprise between 80 and 93 per cent of the travelling public on highways in Canada.

"Consequently, there is a need for a national survey of domestic travel, to determine expenditures on recreation by our own nationals."

Mr. Dymond said later that as far as recreation and wildlife activities are concerned, there is little doubt that they will provide more employment and income as living standards and leisure time increase in Canada.

# *Recreation Workshop A*

TUESDAY, October 24

Providing an adequate resource base for public recreation.

- Chairman: D. B. TURNER, Deputy Minister, British Columbia Department of Recreation and Conservation.
- Co-Chairman: E. P. SHAVER, Assistant Director of Lands, and Provincial Parks Commissioner, Government of Alberta.
- Lead-Off Speaker: A. R. MACDONALD, Planning Supervisor, Provincial Parks Branch, Ontario Department of Lands and Forests.
- Discussants: C. S. BROWN, Director, Parks and Conservation Branch, Saskatchewan Department of Natural Resources.  
W. W. DANYLUK, Chief of Parks Division, Manitoba Department of Mines and Natural Resources.
- Rapporteurs: S. M. ANDERSON, Director, Nova Scotia Information Service.  
JACQUES DUBUC, de Lorrain, Dubuc, Tourigny et Gérin-Lajoie de Montréal.

## **Chairman (Mr. TURNER)**

In 1867 Confederation of Canada was accomplished. Initial preparations were made, as you know, in the meetings of the Fathers of Confederation. Judging by the temper today of the governments of Canada and the ten provinces, it is likely that 1967, one hundred years after Confederation, will be remembered by those who succeed us as the year when *conservation* of Canada was accomplished. Thus the centennial of Confederation and the birth of conservation will be celebrated jointly in 1967.

Attending this "Resources for Tomorrow" Conference, if you will indulge in a bit of pleasant fancy, you may be able to recognize the men who will go down as Canada's Fathers of Conservation, men who want to see Canada great and unified in terms of prudent and wise use and management of its natural resources. These men will complement Canada's Fathers of Confederation who, a hundred years earlier, held their serious meetings to plan the political union of Canada.

Our primary concern in this Workshop is recreation. Our approach to this subject, to which I have referred already, should be as Canadians, not as citizens of a particular province. Our approach to recreation study, I believe further, should be in such considerate manner that the interrelations and im-

portance of all other natural resources with recreation are ever in the front of our minds. Conservation, as you well know, is first of all a regard for the whole, a recognition that agriculture, forestry, soils, water, fisheries, wildlife, mining, energy and people are inseparable and interdependent parts of the conservation entity, every bit as much as heart, brain, arms, eyes, legs and lungs are inseparable parts of the human body. Interfere with and upset one resource, or over-use or damage one part of the human body, and harm is done to the health of natural resources on the one hand or to the health of the body on the other.

As I see our functions today, in this Recreation Workshop A, there are many goals to reach. Let us reach as many as we can, and in particular let us:

1. Establish the fact that recreation is a legitimate form of land use, as are the sister uses such as agriculture, forestry and wildlife. Upon the acceptance of this fact depends the provision of an adequate resource base for public recreation.
2. Establish the fact that "the theory of multiple use," when applied and controlled in turn by "the theory of prior use," should govern when decisions are to be made with respect to legitimate land-use claims by competing resources.
3. Establish in the minds of the citizens of



Canada the fact that physical, mental and spiritual recreations comprise one-third of the essentials which sum up human health and happiness: "food, fiber and fun." It is recommended that this fact be brought home to our people in the only way possible, which is through greatly expanded programs of information and education in all communications media.

4. Stress the need that fundamental research programs, upon which all progress rests, be initiated immediately under federal and provincial government auspices, jointly or singly as required.

5. Resolve, as far as can be done in this single day, the administrative, jurisdictional and educational problems of recreation to the ends that no time be lost in providing an adequate renewable resource base for public recreation and that no time be lost in carrying out, in the federal-provincial partnership spirit of this Conference recreation projects from Atlantic to Pacific for which planning has been done and blueprints prepared.

#### **Lead-Off Speaker (Mr. MACDONALD)**

(A summary of Background Papers related to providing an adequate resource base for public recreation).

##### **1. Demand**

Demand for resource-based recreational areas will continue unabated, on a scale which almost defies imagination. Every social and economic factor points that way. There is growth in every direction and demand for outdoor recreation space will grow as a result of the compounding of many of these factors.

Demand will grow immensely for the popular all-day park located within a 75 mile radius of urban concentrations of population. It will grow at an even faster rate for those overnight and vacation areas lying beyond the one-day travel range.

There will likely be a continuing demand for family-type recreation opportunities. This demand will grow for areas suited to active recreation such as skiing, beach use and boating and for open space and accessible waters for the hunter and fisherman. There is a strong indication of growing interest in the history and heritage of Canada. Increasing demand for historic sites and parks can be expected.

The tremendous and ever-increasing growth in number of foreign tourists will have a greater impact on the resources in the future. As Brooks points out, "This spill-over from the United States is certain to come."

A catalyst of demand not elaborated upon by the authors, but none the less important, is that which will be created as people gain a capacity to use

leisure. The dimension of this catalyst requires attention.

The basic demands are generated by social and economic factors. There is, however, another one—technological—which has an important impact on the social and economic factors and ultimately on the demand for recreational space. Changes in transportation and the introduction of new equipment are steadily changing older concepts of recreation land potentials. These in turn create new demands in areas and in various types of terrain which never before were valued for outdoor recreation.

##### **2. Supply**

From the foregoing facts, we can expect no relief from demand but rather, ever-increasing pressure. What then of supply? Do we have sufficient natural resources to meet this demand now, and ten years or thirty years from now?

Over 80 per cent of Canada's total area of 3,852,000 square miles is comprised of the northern barrens and the non-productive forest belt. To all intents and purposes these cannot be classed as recreational lands.

The productive forest belt lying north of the agricultural or urban areas occupies a critical position in the total pattern of resources use for recreation, but does have serious limitations. Although there are about 600 million acres of moderately accessible area in this belt, the effective recreational space available is undoubtedly far below this figure. There is evidence that the area may not be able to sustain a very heavy pressure of recreation use without serious deterioration.

There is now a very serious deficiency in park facilities in the agricultural or urban areas, particularly within the 50 to 100 mile radius of large urban centers. There are an estimated 170 million acres in the agricultural belt but, as with the forested belt, only a small part of the area is suited to recreational needs. Possibly as little as 5 per cent possesses the natural qualities necessary for large-scale multi-purpose parks.

Although the area of available prime national and provincial parklands appears large, the distribution pattern of parks seriously limits their effectiveness. The bulk of the population is contained in the urban regions of most provinces but these regions contain only a fraction of the provincial park area.

A considerable portion of the expected demand will likely be accommodated on existing large land reserves through their more intensive development. The bulk of these lands, however, is not situated in the intensive demand regions and therefore is not capable of meeting urban demands.

There is a reasonable supply of recreational land in the more northerly forest belt, and it appears that

time is on our side if relatively prompt action is taken to reserve or acquire these lands. In agricultural and urban regions the opposite set of circumstances prevails. Suitable land is in short supply and fast diminishing. There is need for immediate action and longer range planning as well as for a more imaginative approach to what constitutes potential recreational land.

### 3. Administration

Is it possible to provide an adequate resource base for the future, knowing as we do now, what future demands will be and knowing some of the limitations of the natural resource supply? The authors of the Background Papers seem to feel it is possible, but to do so, some changes in our ways and thinking are required.

They point out a myriad of problems and stumbling blocks which in some way or other impede progress. In the field of administration there would seem to be five blocks to the means of solution, namely: *lack of unification of effort; lack of co-ordinated approach; lack of clear-cut areas of responsibility; lack of basic information; and lack of unified administration.*

Each of these factors is a pillar in the structure of any administrative organization. Where one or more is lacking, the weaker the organization becomes and the less likely it is to meet its objectives.

The administration of parks and recreation, to be understood, must be seen in its context as but one problem in the organization of government.

(a) Recreation services at all three government levels lack unified administration. There is an urgent need to draw together the public services at the three government levels so that each provides a cohesive and balanced pattern of services in support of recreation.

(b) Great difficulties of administration arise from the fact that there is no clear-cut distribution of parks and recreation functions among the three levels of government. Functions appropriate to each level of government must be defined with clarity and consistency. The absence of a clear division of responsibility naturally obstructs co-ordination between them.

(c) There appears to be no co-ordinated policy governing national development of recreation resources or programs, nor is there any channel for interprovincial sharing of ideas and discussion of policy.

Battles have been lost, companies have failed and governments have been defeated because of poor or inefficient organization. Is it possible to expect the present administrative organization of parks and

recreation to be successful in providing an adequate resource base for public recreation?

### 4. Jurisdiction

There is apparently no defined area of jurisdiction regarding recreation at each level of government. This becomes obvious when one observes the distribution pattern of national and provincial parks.

Should the national parks be geared to the necessity to fill gaps, where made welcome to do so? Since the federal government cannot develop parks in a province without provincial invitation, is it likely they can play an important role in the future? Should the federal role be, perhaps, more leadership and service rather than operation?

In many instances the term provincial park is a misnomer. Many of the so-called provincial parks are really roadside camping and picnic areas. With their limited areas they can serve no other purpose. Some might better be termed regional recreational areas.

Since regional forms of government have been lacking in some provinces, provincial authorities have drifted into the gap or have been prodded into it. Is this procedure desirable or would it be more effective, in providing an adequate resource base, for provincial authorities to make regional parks a local responsibility, with the province providing technical and financial assistance? This is now possible in Saskatchewan under the Regional Parks Act and in Ontario under the Parks Assistance Act and Conservation Authorities Act.

### 5. Management

Regardless of what may or may not be done to bolster administrative organizations, it cannot be entirely effective unless the status of recreation is brought up to a level of importance comparable to that of other resource users. The need for placing recreation on a par with other resource uses is greatest in the urban regions where demand is highest and resource supply lowest; where conservation and reservoir authorities are now in being, or are likely to be created.

At present the plans for conservation authorities are directed toward water and soil conservation with recreation being but a by-product, if and when conditions permit. With few exceptions, reservoir authorities plan only for water storage, giving no consideration to recreation values. There is an apparent need here for authorities and governments to give greater recognition to the status of recreation.

One answer to the regional park problem, an answer that possesses a built-in economic justification, is provided by recreational use of land in river valley conservation areas and around reservoirs.



One of the most promising facets of the river valley conservation and reservoir approach to the provision of recreational land is the tendency of population centers to emerge by or near waterways; that is to say, this solution can often be applied where the need is actually or potentially great.

Reservoirs will be needed to help overcome limitations of water supply in arid areas. They will also be needed to enlarge the supply in some humid areas where natural recreation resources for public use have been lost.

Parks and recreation departments are agencies which must be represented in the planning and administrative machinery set up for reservoir and conservation area development.

It cannot be denied that the cost of land is frequently high enough to give pause even to the enthusiast. This being the case, the public interest demands imperatively that every opportunity be seized to co-ordinate conservation and development of forest, water and soil resources with the satisfaction of recreational needs.

#### 6. Research

An organization established to provide an adequate recreational resource base cannot put forth its best effort unless it has the tools to work with, and the tool in this case is accurate information.

There is a vast unexplored area of economics and human behavior in the recreation pattern. There is a need for intensive research to reveal characteristics of tourism and its effects on and demand for natural resources. Intensive study of ways and means to preserve the landscape and utilize the countryside for public enjoyment is imperative. There is a need for understanding the meaning of recreation and the individual's capacity for it. There is a need for basic research in the relationship of natural environment to recreation; a present recreation land use inventory and a recreation land use capability inventory.

Inadequate research in recreation land use represents one of the most serious handicaps to the orderly expansion of public recreation facilities and the efficient development and management of renewable resources in general. Recreation now occupies such an important position in resource use that judgments and decisions must rest on a solid foundation of factual knowledge similar to that available for the other forms of land use such as agriculture and forestry.

Baker has stated very concisely the need for research. The reasons for such a dearth of basic research in the field of recreation are probably many, but the two basic ones seem to be (1) failure to recognize the need, and (2) the lack of some administrative vehicle to carry out research. The necessity

for recreation research has been clearly stated; there remains now the problem of finding a means by which research can be effectively carried out.

#### 7. Information and education

The last point I wish to cover, but certainly not the least important, is that dealing with public information and education. Since there has been some measure of failure in providing an adequate resource base for public recreation, we might enquire further as to why.

Is it, as Baker has said, because there is a basic unawareness of the problem or does the difficulty arise from an inability to give an effective expression of the need within the socio-economic system? Is there a feeling that recreation requirements have a low priority in the total gamut of social investment where schools, sewage systems, highways, etc. are making such heavy demands? Do we feel that we can provide for our needs by individual rather than group action?

Is it possible that each of these reasons is a contributing factor to failure but the real culprit may be public unawareness? Is it likely that, until the public becomes fully aware of the problem in all its ramifications, they will not be in a position to pass judgment on to governments and there will continue to be a shortage in the supply of an adequate resource base?

The general public, if not deeply aware of the place of humans and other species in the biological community and if not cognizant of the social and economic values of renewable resources, will be largely without intellectual means of judging management practices and over-all resource development policies.

Because of the nature and scope of the provincial governments' responsibilities for management of renewable resources, it is taken as axiomatic that the primary responsibility for collection and dissemination of information rests with agencies of these governments.

Of a total of 361 publications received from resource agencies of all provinces and reviewed by D. F. Symington, 298 were judged as administrative, e.g., annual reports, technical reports, etc., or operational in content, e.g., tourist promotion, gun safety, etc. The remaining 63 publications had as their basic theme information dealing with the resources and resource management. Public education on resources and resource management comprises only one-sixth of all information disseminated.

Based upon the results of this survey alone, can it be expected that the public is well informed of our natural resources and the management of them?



Is there a need for resource agencies to reassess their present information-education programs?

**Discussant (Mr. BROWN)**

I would like to raise four points.

First, a new tool is being designed only now which can be very useful in providing an adequate resource base for recreation. Too recent to be evaluated in the Background Papers the federal Agricultural Rehabilitation and Development Act offers much promise. Might the Workshop consider how this legislation could be integrated most usefully in our interests?

Second, a point made by one of Monday's speakers—most of the Background Papers tend to lift resource development out of the context of the political environment in which government programming is carried out. Politics and differences in politics are a reality with which civil servants and other resource development agencies must learn to live.

Third, I would like to make the point that problems in regional recreation resource development go far beyond the need for the simple sharing of financial responsibilities between province and municipality, which is provided for in Saskatchewan's regional park legislation.

The Background Papers imply that Saskatchewan has arrived at a universal solution. It is true that we have gone a long way toward solving Saskatchewan's particular problem, but the problems of the urban-centered region, so prominent in some of the other provinces, cannot be met in a similar piece of simple legislation.

What appears to be needed in most instances is regional planning or *land-use control*, to ensure that optimum use is made of recreational resources in the interest of present and future populations—but in appreciation of other resource-use demands. Three examples illustrate approaches to this method:

(a) The Alberta brand of regional land-use control seems to provide the machinery by which recreational resources in urban-centered regions can be used to their best advantage.

(b) New Manitoba legislation permits provincial control of these resources surrounding reservoirs.

(c) The South Saskatchewan River Development legislation provides one further example of still broader control. Here the need is realized for land-use control of much wider application.

But this point—and the one preceding it, respecting political implications—both tend to emphasize the significance of my fourth point, which is the primary need for greater public awareness of resource development factors and problems.

It is sometimes not difficult to convince legislators

that a statute should be on the books—but a conservation statute on the books is quite a different thing from effective resource-use control. Effectiveness is only possible with public support—and public support can be gained only from a public fully aware of the practical problems that make the legislation necessary in the first place.

This applies, of course, not only to regional problems but to the majority of problems which face recreation resource people; problems of inadequate budget, land acquisition, over-use, non-compatible use, fire control, water pollution and many others.

I suggest that Symington's Background Paper on information-education is *one of the most significant* to this Workshop dealing with the problems of providing an adequate resource base. I speak of course, from experience in Saskatchewan, where we dream of what we could do with full public support and understanding.

How do we go about a public education program? What techniques are most effective? Who will pay for it? How do provincial park agencies obtain the necessary funds when government-sponsored information programs are looked at with such suspicion? How do we win voluntary press, radio and television support and understanding?

Should the public contact of well informed field staff and park staffs be sufficient?

These are only a few of the questions, the answers to which might provide the necessary guidelines to effective action. I trust that at least some of these guidelines will be defined through this Conference.

**Discussant (Mr. DANYLUK)**

Throughout the recreation sector of the Background Papers, there is expressed a concern for the lack of co-ordinated and unified action at all government levels, and the overlapping of responsibilities and jurisdiction, in providing an adequate renewable resource base.

The statements suggest two common denominators: (1) That criteria must be determined for the selection and development of areas for specific recreation; and (2) Within the framework of these criteria, the jurisdictional and administrative responsibilities are a necessary part.

This matter is important to us in Manitoba because we are a young province recreation-wise, and we are attempting to define our role and develop our plans in their proper perspective.

From this viewpoint, let me illustrate by these examples:

We are currently considering two areas for inclusion in our park system. The first of these is an exceptional resource complex of accessible northern forest, lake, and canoeing waterways. The area also forms one of the finest big-game and sport-fishing

habitats in the province. The second area, located in central Manitoba, is bounded by two of our great lakes and will soon have as its northern boundary the third largest lake in the province, to be formed artificially by the forebay flooding of the Grand Rapids hydroelectric development.

Mr. Baker stated in his paper that the determination of the recreational resource is dependent upon its physical characteristics that comply with the *principle of the unique* and the *principle of the representative*. Both of these areas comply with these concepts. The first is truly representative of the physical character of a great deal of our coniferous forest belt. The second area is a unique combination of primarily natural factors similar to the area adjacent to the Great Lakes. Because both areas are Crown lands within provincial jurisdiction, we know that we have prior rights. Both areas, however, offer a recreational potential of such magnitude that, when properly developed, each could receive a high level of national interest.

Should either one of these areas become a provincial responsibility for development? Is the province financially capable of developing the maximum recreational potential?

At the opposite pole, we have throughout rural Manitoba a number of recreational sites that are neither unique nor representative when considered from the provincial viewpoint, but may be one or the other when viewed from the rural municipal aspect.

Because of budget limitations, rural municipal governments were (and still are) incapable of venturing into recreational development, and public pressures were applied on our provincial parks

agency for expansion into these areas. Most of the sites are incapable of fulfilling any but the local demand and have no natural features that might give rise to some provincial interest. As a result, we are dissipating our efforts and financial resources through an area of responsibility that may not be primarily provincial. The solution undoubtedly is provided through some form of regional development assistance, perhaps along the lines provided in Saskatchewan. Our problem, however, is in determining where the rural government responsibility for recreation ends, and where the provincial responsibility begins.

There are other examples. The restoration of historic sites, such as the fur trading posts of the West and the tracing and marking of La Verendrye's exploration routes, form that part of our history concerned with Canadian expansion and settlement. These historic features extend beyond our provincial boundaries. While they are of provincial interest, they have a greater significance as part of the Canadian historical scene. Their development as a recreation resource should follow a definite pattern that cannot be attained unless co-ordinated through one agency.

I use these examples only to point out our need to define and delineate our respective roles in recreation resource planning.

Were we to have a framework of reasonably flexible criteria classifying the field of resource-based recreation along national interest, provincial interest, and local interest lines, I am sure that some of our jurisdictional and administrative problems could be resolved.

## DISCUSSION

Following the presentations of the lead-off speaker and discussants, certain basic guides to discussion were agreed to. These included, first, a consideration of basic assumption concerning recreation and renewable resources. Following this the Workshop agreed to direct its discussion toward four main problem areas: research, administration, jurisdiction and information-education.

### *Assumptions*

As necessary groundwork for effective discussion, the Workshop considered a number of basic assumptions with respect to both the nature of public recreation facilities and the nature of renewable resources. Unanimous agreement was reached on the following:

#### *1. The Nature of Public Recreation Facilities*

(a) There will be a substantial increase in total demand for public recreation facilities due to an in-

crease in leisure time combined with sufficient disposable income for its enjoyment. Further, there will be a continually changing pattern of recreation; for example, changes which would come about with the establishment of a four-day work week.

(b) A wide range of facilities is required to meet variations in individual tastes and in needs for cultural and physical activities.

(c) There is a considerable degree of uniformity across Canada in the character of demand for recreation facilities.

(d) Full utilization of the resource potential to meet recreation needs requires development of facilities on both a public and private basis. Private needs include development by individuals and families, by clubs and associations and by commercial operators. Where private action fails to meet the need, public development must make provision for a broad range of cultural and physical



activities—outdoor and indoor, active and contemplative.

(e) Development of public facilities is a responsibility shared by all levels of government including municipal, county or regional, provincial and federal.

(f) Demand for regional facilities within a 50 to 75 mile radius of large urban centers is and will continue to be intensive.

## 2. The nature of renewable resources

(a) In the forest belt of Canada the available supply of renewable resources is vast, but not unlimited; in agricultural and urban regions the supply is critically limited.

(b) The distribution of resources in relation to the distribution of population will result in an uneven pressure against the resource base.

(c) Recreation potential is limited by the wide variation which exists in the physical characteristics of the resource base.

(d) In considering the supply of renewable resources for recreation, the special resource requirements of many recreation activities and facilities constitute a limiting factor.

(e) The accessibility of resources is directly related to technological changes in transportation.

(f) Resources can withstand only a certain amount of pressure for recreation use beyond which serious deterioration or complete destruction of the natural environment will result.

(g) Natural resources once lost to non-compatible uses rarely can be recovered for, or restored to, recreational use.

(h) Resource needs for recreation can be met with maximum efficiency only through a partnership of all government and voluntary agencies operating on the national, provincial and local levels.

(i) In the event of conflicts in resource use, public needs should have precedence over private and commercial interests.

## Recreation research

### 1. Need for fundamental studies

The Workshop agreed unanimously that knowledge and information in certain basic fields is inadequate. These basic fields include the following as they apply to recreation: the potentialities and limitations of the supply of renewable resources; the nature and extent of programs offered by public and voluntary agencies; and the character of present and future demand. The clear need is for a comprehensive and balanced research program for recreation, including (but not limited to) the following:

(a) *Present recreation land use inventory.* This inventory should be designed to reveal the extent and location of public and private forms of development for recreation purposes on both private and Crown lands. It should include such *private* developments as cottages, summer camps, golf courses, accommodation, commercial parks and picnic areas. On the *public* side, it should count and classify (among other uses) public parks, nature reserves, historic and archaeological sites and wilderness areas operated by all levels of government.

(b) *Present recreation program inventory.* This project, the Workshop agreed, should be designed to reveal the scope and limitations of programs currently offered by public and voluntary agencies in Canada.

(c) *Comprehensive travel survey.* Both foreign and domestic travel patterns need to be understood more definitively. With respect to foreign travel, the Workshop proposed an expansion and refinement of data now supplied by the Dominion Bureau of Statistics. An understanding of the domestic travel pattern requires the establishment of an interprovincial survey at the national level, co-operatively planned by all provinces and territories and co-ordinated by some federal organization such as D.B.S. This domestic survey should reveal, on a continuing basis, the following:

- (i) Total and seasonal volume and value of interprovincial travel;
- (ii) Length of time spent by travellers in each province, and the reason a specific period was chosen for travel;
- (iii) Reasons for domestic travel;
- (iv) Reasons for foreign tourist travel;
- (v) Mode of transportation;
- (vi) Reaction of travellers to food and accommodation and appeal of the area selected.

(d) *Recreation resource capability inventory.* To be determined here are the extent and quality of the resource base suitable for various types of public and private recreation development. Specific resource areas proposed for study were: the shorelines of the Atlantic Provinces and Great Lakes; the Territories and Arctic Archipelago; and the regional resources within a 50 to 100 mile radius of large urban centers.

(e) *Standards.* One major requirement, the Workshop agreed, was research designed to establish standards for planning, development and management of public recreation facilities. Among other things this research should include the following aspects:

- (i) The determination of criteria to be applied in the selection of areas for specific recreation uses (such as parks, historic and archaeo-



logical sites, nature reserves, etc.) and the assignment of responsibility to appropriate levels of government;

- (ii) The determination of per-acre carrying capacity of various types of parklands and recreation areas;
- (iii) The determination of desirable capital investment per acre in recreation areas;
- (iv) The determination of acreage standards per capita;
- (v) The determination of the economic value of parkland;
- (vi) The nature and requirements of the camping or tenting movement;
- (vii) The nature and requirements of the winter recreation movement.

## 2. *The need for flexible institutional Arrangements*

Institutional arrangements for recreation research, in the view of the Workshop, should be broad enough and flexible enough to involve universities, government departments and private organizations.

Universities should undertake basic research in the relationships of various aspects of the social and natural sciences to recreation. Federal and provincial grant programs for university research should be extended to cover investigation of problems of park and recreation development.

Government departments should undertake the research required to support planning, development and maintenance operations at the federal, provincial and municipal levels. Any realistic implementation of this proposal would require considerable expansion of the planning sections of federal and provincial park administrations.

At least two kinds of private research should be provided for. The first includes research undertaken by commercial companies involved in inventing and testing apparatus and materials. Second are the private park and recreation planning and consulting services. The degree to which it is necessary to expand government research staff will largely depend on the extent to which private research resources are utilized.

## 3. *Co-operative government action*

A research program of the type outlined requires co-operative and united action by all levels of government if it is to be successful. Some central agency is necessary at the federal level, and perhaps provincial level, to co-ordinate activities and disseminate information. There are several possibilities:

- (a) Co-ordination of research could become a function of the Planning Branch of the National

Parks Service, jointly with provincial parks planning organizations.

- (b) A special commission, such as the United States National Recreation Resources Review Commission, could be established on a permanent basis.

- (c) Co-ordination could become a function of a National Research Council for Renewable Resources or of some branch of the National Research Council established to handle natural resources research.

## *Recreation administration*

### 1. *Need for co-ordination among resource management agencies*

At all levels of government, inadequate interdepartmental co-ordination and co-operation in the management and development of the resource base tend to waste and destroy the resource potential. To offset this it would appear desirable to:

- (a) Establish some type of interdepartmental committee that includes major resource management and development agencies along with those responsible for park and recreation development to co-ordinate activities;

- (b) Establish some type of Land Utilization Board;

- (c) Establish some type of Regional Planning Authority for Recreation.

Agencies of this type would be required to ensure that the needs of recreation and tourism, particularly those of public park development, are met:

- (i) When Crown lands are leased or offered for sale;
- (ii) When highways are planned and constructed;
- (iii) When reservoirs are designed and constructed, particularly in the arid parts of Canada;
- (iv) When schools are designed and constructed for any level of education;
- (v) When housing subdivisions are planned;
- (vi) When gravel pits and power lines (which can destroy recreation potential) are planned;
- (vii) When master plans for development are prepared.

### 2. *Need for co-ordination between resource managers and recreation program planners*

Inadequate co-ordination and co-operative action between departments responsible for the development and management of resources for recreation (e.g. parks, historic sites, boating areas, etc.) and those responsible for devising and implementing recreation programs creates problems and waste. To offset this it would appear desirable to:

- (a) Establish interdepartmental committees designed to co-ordinate activities between agencies of this type.

(b) Establish Park and Recreation Departments designed to bring all activities under a single administration as has been done in British Columbia.

### *Jurisdiction problems*

#### *1. Between public and private sectors*

Confusion with respect to the role of government in relation to private, commercial or voluntary agencies in the provision of park and recreation facilities for leisure time activities creates problems in connection with the provision of an adequate resource base. Clarification of jurisdictional responsibilities is necessary.

#### *2. Between levels of government*

The hierarchy of jurisdictional responsibility between various levels of government for park and recreation development remains confused in that: (a) the relation between federal and provincial agencies appears foggy in terms of the distinction between the types of development required by each; and (b) the development of regional parks, which lies somewhere between provincial and municipal responsibility, has lagged. Possible approaches to this problem include:

(a) Development by River Valley Conservation Authorities, as in Ontario, with technical and financial assistance from the provincial government.

(b) Development by a group of local municipalities with technical and financial assistance under terms of regional planning legislation similar to that of Saskatchewan or the legislation providing assistance for municipal park development in Ontario.

(c) Possible financial assistance from the federal government for the development of regional park facilities. Assistance provided to the Conservation Authorities in Ontario for winter improvement schemes for the Upper Thames Valley is one example of this approach. This pattern can readily be extended to park development by Conservation Authorities if desired.

The jurisdictional responsibility for the control of water and shoreline resources remains uncertain and requires immediate clarification. The small boat conferences of the Department of Transport in recent years, which have placed the main emphasis upon a water safety program, have only skirted this problem.

### *Recreation information and education*

After a discussion which ranged from the content of information programs to new forms of organization, consensus was reached on a series of needs in recreation information and education.

#### *1. Reorienting content*

To secure a more intensive use of and greater return from resources devoted to recreation purposes, there is a need to reorient the content of information and education programs. At present these programs encourage people to use limited recreation resources along traditional lines, thereby creating greater pressure on the resources. It is suggested that:

(a) The fundamental purpose of recreation information and education programs is to establish in the minds of the public the fact that recreation is a highly important and legitimate form of land use.

(b) Information and education programs be directed toward broadening the interests of people in the varied forms of recreational use that can be made of the resource base. This would require promotion by trained personnel along such lines as (i) broadening interpretive programs; and (ii) introducing cultural activities where desirable.

(c) Information and education programs be directed toward establishing a greater public awareness of the variety and value of recreational facilities available.

#### *2. Co-ordinating government information agencies*

There is a need for the co-ordination of government information agencies in the recreation field. The task cannot be accomplished by the information agencies of recreation departments or branches alone.

#### *3. Establishing a federal-provincial parks association*

There is a need for an informed, organized, non-government association to promote the interests of park development and perform a "watchdog" role over those areas now reserved for park purposes.

#### *4. Exchanging information*

There is a need for an exchange of information among government administrators in park and recreation work at provincial and national levels. This requires the establishment of a Canadian Association of Park Executives which can consider problems frankly *in camera*. Federal support from the National Parks Service is desirable here.

#### *5. Training personnel*

There is a shortage of trained personnel in the recreation field that can only be overcome by the provision of educational facilities. This requires:

(a) Short-term course opportunities organized on a national or regional basis for the training of park supervisors;

(b) Development of degree courses at universities for park personnel;

(c) Further development of degree courses at university level for recreation personnel.

#### *General discussion*

Although the Workshop concentrated on the specific problem areas outlined above, a fruitful exchange of ideas on other topics took place as well. Among the more significant suggestions to emerge from discussion were the following:

*Primitive wilderness areas* should be set aside now for future scientific and recreational needs.

*There is an immediate and continuing need* to remove, and to avoid, the pollution of natural waters so that they may be used for swimming and bathing.

*Family recreation* should be emphasized because it strengthens family ties.

*Land gifts* for recreational purposes could be encouraged by the federal government through broadening tax relief to the donor, as in the case of gifts to foundations, with a provision for their acceptance by appropriate bodies.

*Provisions of the recently-adopted Agricultural Rehabilitation and Development Act* will have far-reaching effects in providing land to expand the recreation resource base. If interpreted in recognition of the needs of recreation, ARDA may well make land available close to, or within, heavily populated regions where recreational opportunities are now in extremely short supply.



# *Recreation Workshop B*

TUESDAY, October 24

Devising and implementing programs for more effective utilization of renewable resources.

- Chairman: J. W. CHURCHMAN, Deputy Minister, Saskatchewan Department of Natural Resources.
- Co-Chairman: W. H. KAASA, Director, Recreation and Cultural Development, Alberta Department of the Provincial Secretary.
- Lead-Off Speaker: A. V. PIGOTT, Director, Canadian Association for Adult Education.
- Discussants: E. R. McEWEN, Deputy Head, Recreation Branch, R.C.A.F. Headquarters, Ottawa.  
K. G. HIGGS, Director of Operations, Metropolitan Toronto and Region Conservation Authority.
- Rapporteurs: D. K. CROWDIS, Director, Nova Scotia Museum of Science.  
PAUL LALIBERTÉ, Planning Department, City of Montréal.

## **Chairman (Mr. CHURCHMAN)**

In determining the terms of reference for the workshops on recreation it was finally decided to base them on two rather broad categories: (1) the resource base, (2) the program.

Workshop A will be dealing with the resource base. They will be concerned with the provision of a base upon which programs may be built. In this Workshop we will be more concerned with the program aspect of recreation, although I would suggest we should be particularly concerned with the effect programs will have on the resource base.

It is evident from the material prepared for this Conference that there are often pressure groups who want to introduce programs into parks which the base does not permit. Likewise there are times when, just on general principles, the resource people want to exclude a program.

This Conference is perhaps unique in that it brings these two groups together; the custodians of the land—the ecologist, the forester, the biologist—and the program specialists. May we hope that in addition to discovering they are all good fellows we will find common ground upon which future progress toward better recreation may be based.

I would suggest to both our resource managers and our program planners that, in our discussions, we keep in mind the paramount reason for our in-

terest in recreation—namely, the people. Their needs and wants should have a prominent place in the devising and implementing of programs for the more effective use of our renewable resources.

Since this Conference is centered on renewable resources, I am sure you will agree that we should endeavor to confine our discussion of programs to those directly related to natural resources. I am thinking of such things as swimming, boating, camping, hiking and nature trails, in contrast to those programs which can be carried on effectively without dependence on a renewable resource base. I am sure it will be brought out that many of our cultural programs such as art and drama are now being based on renewable resources and, as such, are not excluded.

The committee charged with topic selection recognized that the lack of adequate joint planning and co-operative action among the many government and private agencies involved in a wide variety of recreation programs constitutes a basic obstacle at the present time. However, it was felt that this problem belongs more appropriately to a conference devoted specifically to a consideration of programming for recreation. At a meeting in Ottawa on May 15th, sponsored by the Canadian Welfare Council, it was agreed that a special conference would be convened in 1963 to consider this problem in detail.

I am sure that the results of our discussions today will be of considerable value to that conference, at which many of you no doubt will be present.

#### **Lead-off Speaker (Mr. PIGOTT)**

In considering recreation needs from the program point of view we must at all times be conscious of the individual. His needs and desires along with those of his family are the ingredients of a program structure. What the individual can find close to home and suited to his tastes will be what he will make use of for the major portion of the time. More remote facilities are, of course, important, but he will use them less frequently.

Group interests will sort themselves out and seek activities both locally and more distant. Programs to suit these needs become more complicated in their achievement and require organization beyond the bounds of the local community. Thus we have local, regional, provincial and national organizations, both voluntary and governmental, called into being. We shall also discuss tourism because of its increasing importance to domestic and foreign travellers. The economic value of tourism to the nation places it in an important position among our resources. It must be remembered that some 80 per cent of our tourists are domestic rather than foreign. Programs set up to suit our needs are the important ones. No doubt they will attract outsiders as well.

In the time at our disposal in this Conference we must limit discussion. We shall paint in broad perspective here. The nature of the problems will concern us more than the details of their solution; the dimensions and the impediments rather than the minutiae of separate programs. Have we any general operational principles; have we any guidelines to action on which we can agree? What can we express concerning the obstacles in the way of research, jurisdiction and administration?

#### **1. Demand prospects**

In Canada we shall have 27 million people by 1980; 54 million by the year 2000. We are not as far away from the 21st century as we are from the first World War. Increasingly, growth is taking place around cities. Within a decade or so 75 to 80 per cent of our growth will take place in 12 metropolitan areas across Canada. Rural population will be a lesser proportion, but we must not neglect program for ruritania in a new setting quite different from the old.

Urban, industrial living is creating new demands, first for personal and psychological help through recreation. Specialization, decline of neighborliness, social distance, mobility, dependence on government

—these and other factors of the urban, industrial culture give new significance to the use of leisure time. The second demand is for family living. The family has changed from a co-operative, producing unit to one which is consuming rather than producing, and it is based on individual rather than common concerns. The functions of the family—economic, status-giving, educational, religious, protectional and affectional—have all changed, but none more than the recreational function, which was largely family-centered down through the ages.

A third demand is for local organization and planning. Welfare councils, community and social planning councils and similar organizations have spread across the nation. Recreation has received due notice through recreation divisions, which seek to work out programs for the local community. Standards are sought, leadership training is given and co-ordination of services is promoted.

What is the best method of supplying services to meet the needs of communities? Divisions of welfare councils exist mainly in cities. In most cases they lack both adequate budget and personnel to do the job required of them.

#### **2. Supply related to the many demands**

Population increase will demand a huge supply of facilities. Far into the future it is evident that use of leisure time will play an increasingly important part in life. Undreamed of demands have to be dreamt of—and met. Action must be taken to supply the needs quickly and in an orderly fashion.

##### **(a) Close to home**

Home, school, church and community plant must be built for multi-purpose uses. Recreation will have a high rank among these purposes. Use of leisure time is the greatest mine and powerhouse of human energy and goodness in the control of any civilization.

The lack of co-operative planning in the local units of society causes great waste and high expense. Use of schools is one example among many. Huge amounts of money are tied up in buildings, built without regard to their full use in the community for richer living. Where efforts have been made to correct this, programs have often developed.

We have a long way to go in devising good programs developed through the co-operative planning and involvement of the people concerned.

Larger cities have made starts in organizing recreation councils made up of private and public groups. However, most of the country is without such bodies set up in any effective way. Again, welfare councils

and community planning associations have attempted co-ordination. We need co-ordination of the co-ordinators to get the best planning.

*(b) In the nearby community*

Immediate steps must be taken to create a sense of urgency about the preservation of resources still available, the acquisition of others needed, and orderly development of suitable programs and resource use. Once again, people must become involved in large numbers in the planning and development of recreation.

City and suburban living demand escape from the crowded environment of the work week. Parks and recreation facilities, wilderness, beaches and places of scenic beauty or historic interest can do much by way of giving balance to life in the city.

Young people must be the center of our interests in the provision of opportunities for rich experience. Education is concerned with conserving human ability, habilitation, and providing opportunities for growth and development of the individual in the values of citizenship and use of leisure time. How well are we measuring up to the problem of providing environments in which young people can acquire healthy habits, good ideals and proper attitudes toward the use of leisure time?

*(c) Farther from home*

Modern transportation in general, and the automobile in particular, make available to families a wider range of resource enjoyment than ever before. Recreation leaders, road builders, biologists, social scientists, educators, politicians and many others must become concerned in joint planning and action, if sound programs are to be developed.

Acting in the field of particular interest on the part of any of the above specialists, a partial solution in one area may work to the detriment of another. The building of a school, a reservoir, a highway or a park affects many areas of interest. Effective means of making use of the various talents available are a must. Good communication among such groups and an inclusive planning structure can pay rich dividends.

How well are we doing in this regard? The causeway to Cape Breton diverted a valuable fish run. The road north from Halifax affected greatly the catch of smelt and alewives.

The supply of recreational facilities involves many interests. How do we see that there is good intercommunication between experts in the field? Partial points of view do not lead to good planning. Recreation councils must have broad contacts and inclusive interests.

*3. The cost of supply is always an important factor*

Many a resource seems too expensive to acquire or maintain when only one use is considered. By putting together a picture of the many benefits to be derived from the use of the resource, new light is thrown on the expense involved. In addition we must consider possible uses to be made of the resource a generation or generations from now. Now is the time for research and preservation of resources that will be difficult to achieve in years to come.

We are already late in acquiring parks, beaches hunting grounds, water facilities and many other resource facilities near large centers of population. Regional bodies to acquire and control such resources are necessary. Our governmental setup is such that regional bodies are difficult to form and hard to administer. A break-through is needed in this, apart from what has happened in large metropolitan areas. Regional planning is an outstanding challenge at the present time.

How can we achieve better and easier regional organization for recreational purposes? How can we arrange for all the intercommunication and co-operation needed in good regional organization? Again, great dividends can be derived from finding early answers.

In this regard we might mention the ventures of libraries, health units and certain voluntary health agencies in setting up regional types of organization to meet the demands for their services.

*4. The implication of technology must be considered*

A high degree of specialization is demanded in the training and work of the individual in industry today. Fairly early in life the young person becomes enmeshed in preparation for a special type of work, and to become successful acquires a high degree of skill. Thus the very preparation for the world of work tends to develop a multiplicity of personality types. Communication among the types becomes more difficult, yet never before did the community, or the whole world for that matter, demand greater experience and knowledge in co-operation.

No longer do we seek the all-around man, as in the days of hunting and farming. Specialization is demanded within fairly narrow limits. If the job at which a man works does not give him broad understanding and experience in human relations, surely he must find them in his leisure hours.

The four great wishes of mankind in all ages have been for security, acceptance, achievement and recognition. As a worker on an assembly line, satisfactions of these needs are not evident. Off the job the individual will seek to compensate for these



deficiencies. How well prepared is he as an individual to do so? How well is the community organized to help him to do so?

Here, again, much research and organization are demanded. Nor have we the time to move along gradually. A sense of urgency and a wide public awareness of the problems are required.

#### 5. *Research problems*

An understanding and appreciation of the meaning of recreation is of great importance. We do not understand enough about the human motivations in recreation or about its economics.

Changing trends in recreation seem to be evident. What are they, and what will they likely be in the future?

Canada has many wonderful resources for tourism. Are they not as valuable as many other resources? How do we exploit these resources in balance with demand, on the one hand, and with competing resource uses on the other?

Private ownership should be permissible under our system of enterprise without harming public interest. Can the public purse handle the demands of the present and make provision for the future? Are there not many good schemes to keep public and private interests in balance?

Three lines of investigation have been suggested in the background material: (1) the relation of natural resources to recreation; (2) a recreation land use inventory; and (3) a recreation land use capability inventory.

#### 6. *Research organization*

A great deal of money is now being spent on research and administration, leadership training and planning. Everywhere there is evidence of government and voluntary agency interest and concern. It seems evident that great economies and increased effectiveness could come from co-ordination through some all-embracing organization or body of some kind.

What kind of body should it be? What would it be called? What should be its terms of reference?

We have talked a great deal about the need for research. But there is no reason for waiting until all the facts have been gathered before we go into action. There is enough information at hand now to do many things. Our practices are still far behind our precepts.

How can we get into co-ordination, planning and action immediately? What advice can we hand on to the 1963 conference?

If we make the best use of present institutional research and of the universities, with good staff leadership and adequate budget, I have no doubt that we can start to transform ourselves immediately.

#### 7. *Need for a national policy*

Canada lags behind many western nations in giving positive guidance and support to a national recreation policy. In fact, we have immediate need of a declaration of policy. The many dimensions of recreation need recognition. A system of priorities has to be worked out.

We have devoted high endeavor in the world of today in improving our material living and in developing great forces of destruction. Has not recreation a prime part to play in supplementing the one and controlling the other? One of the resource writers states that recreation is the cradle of perception and kindness.

#### 8. *The many dimensions of recreation*

When you consult the man on the street concerning recreation, you are probably in for a shock. His description of recreation is not usually a broad one. Yet if social health depends to some extent on the use made of leisure time, how do we go about elevating public taste?

It is not enough to provide a cafeteria of services and hope that people who need them most will avail themselves of the opportunities before them. The individual wants to pursue his needs and desires and he will do so with vigor and enthusiasm if given a chance.

Now the round starts. In a complex society the individual is rather powerless alone. He must work through a group or an agency.

Local government and voluntary agencies can discover tastes, needs and desires. At this level, the program can be made effective. But often help is needed with budget, leadership and program. Regional, as well as provincial or national help is required, especially with regard to physical arrangements. Help with physical requirements must be provided in a way which does not interfere with program. The program is the thing to watch; it should not be subordinated. Many parks boards suffer from this lack of vision. In my youth, parks were covered with "Keep Off the Grass" signs. But parks are by no means the sole example of letting physical facilities take precedence over program.

#### 9. *Management of recreation*

Material possessions and property rights are familiar to all of us. Land use, program, and research are not so meaningful. Thus, a local parks board is often unsympathetic to group work programs for boys; or a school board sees no reason for providing appropriate space to a Scout group. Anyway, the janitor doesn't want to work overtime, and, if he does so,

assumes full command of what can take place. The recreation program, if it is the important thing, fares better when the body in charge is set up with a proper orientation. There is a growing tendency in cities to have the parks and recreation boards in the same office. I will not venture to say that in all cases equal status is given to each.

What have we to say about such management programs? How can we keep up with the needs as they grow and change?

Almost everywhere provision for parks is inadequate. Tripartite agreements on the part of various levels of government are needed to preserve and acquire room for future recreational needs. What advice do we have about the management problems involved?

Much parkland and waterfront territory is now in danger. Immediate action is required. How can such action be stimulated?

A special area of study might be set up with regard to the use of groups of specialists which could be made available to various recreation organizations. Smaller units cannot afford to have experts employed full time. Co-operative use of teams which could offer field services might do a great deal to stimulate good planning and action. At the same time this would make possible the economic use of valuable personnel. There is a dearth of such specialists. Such a use of their time and talents would make available many challenging positions and thus keep in Canada some leaders who, through lack of challenge, go elsewhere.

#### 10. Integrated planning

The school, the library, community centers, parks and playgrounds, public and voluntary agencies, ethnic groups, welfare and group work agencies—when we start to outline the activities of any city or region, the list becomes very long. On the regional or provincial level, again there is a long list. So, too, for national groups. If we go through the ramifications of the lower levels of organization, we find tens of thousands of organized activities. It is good to have it so. Spontaneity, involvement, and participation give life to the organizations and activities. In our enthusiasm for organization and control of expense, let us be careful about being too restrictive.

We are very cautious about expenditure of money, and there is no doubt that great savings can be made. However, let us not worry too much about a bit of apparent waste if, in making a saving, we may damage involvement of individual interest or the program activity. Good leadership and co-operative planning can correct such conditions. Progress is slow at first, but momentum increases with experience. Ask the members of a recreation division

in a welfare council; they have had experience in this field.

#### 11. Administrative-jurisdictional problems

It is evident that co-operation on all sides is needed, but what are the best vehicles to use for this purpose?

Recreation has "just grown" through the years. Convenience of the moment has often led to the attaching of a recreational activity to some department or division of an institution or agency. Truly, in some cases one is reminded of the description of a camel as being a horse put together by a committee.

Leisure-time activities include so many areas—sports, physical fitness, adult education, camping, parks, tourism, what not. Again each of these contains strange mixtures. How do we sort them out?

One of the principles of evolution is that *use makes form*. A foot becomes a flipper if the animal takes to sea, and a hand becomes a wing in the air. Biologists will shiver at the way I describe the process. However, I am trying to deal with jurisdiction in recreation. What should be under the jurisdiction of the local, regional, provincial or national organization or government? Is it not possible to change jurisdiction when necessary, according to the use being made of a park, for instance? A provincial facility crowded with local people might well be managed by local authority. Conversely, why must a local board try to administer a facility crowded with boats and fishermen who come from afar? Surely, jurisdiction can be changed to suit the program and the use of the facility.

In the case of the park within a municipality used by local people to a large extent, a local parks board can be sensitive to the program needs. Elected representatives, along with appointed volunteers, can do a good program job. Have we things to say about functions and proportions of elected and appointed members; about relations of the body charged with the physical development of the facility and the body charged with programs?

In growing urban communities, facilities must be provided outside the local community. This requires an administrative-jurisdictional setup not provided for in early days. Regional forms of governmental bodies are required. In the background material, attention is called to the case of the Toronto waterfront, where 30 bodies have some jurisdiction. Laws beset the waterfront from all angles and with varying intent, to the confusion of all concerned. We might mention, too, that the waterfront is largely privately owned and most thoroughly polluted.

At the same time, co-operative planning has been well worked out in some of the metropolitan Toronto water conservation projects.



The *unique* and the *representative* are the principles indicated as being basic to the solution of jurisdictional responsibility at various government levels.

Can we as a body make suggestions concerning the application of this principle, which might encourage changes in the provinces needing help in this regard? Ontario and Saskatchewan offer assistance for regional parks. The development of regional recreation bodies offers a challenge in our area of greatest need.

Much should be said about provincial and national administration and jurisdiction. Long-term needs must be considered. The relation of forest and game preserves to parks and recreation programs will give rise to increasing problems. Will hunting in the future be a class privilege as it is in Europe? To fish or shoot deer, will you have to own a patch of water or a bit of forest and confine your activities accordingly?

We must not forget the far north or other places rather inaccessible at present. Increased population, wealth, leisure time and mobility in the future call for imaginative thinking and action now. For such places there are no local bodies to plan for future use. Provincial or national councils must do the job.

## 12. Information and education

Recreation in its wide sense is of great personal and social significance. Physical and mental health demand proper recreational pursuits. Cultural life grows best in an encouraging environment. Industrial peace and domestic happiness alike are related to the individual's opportunity to pursue rich activities. His chances of doing so depend upon the ways in which his society is organized. Increasingly, the individual becomes more helpless, and change depends on larger and more complex organization.

The values of citizenship and recreation are as

much a part of education as are the traditional subjects of the curriculum. They are, as well, the proper concerns of political action and social investment.

Public awareness is at the bottom of all progress in a democracy. Massive attacks in the fields of education, information, statistics and research are called for. In the past, recreation has been hampered greatly by the lack of information. However, information must be adequate and broad in its scope. We have suffered from the partial; partial points of view, partial services and partial organization. The information derived from specialized bodies needs synthesis. Every individual will—indeed must—use up his leisure time. If we look back over history we find that leisure time was rather scarce and the privilege of a few people in only a few periods of time. Nevertheless, in any age, given a bit of security, a degree of wealth and some free time the spirit of men produced the philosophy and art, the sculpture, poetry and painting that made their time memorable. Science, too, was in large part the achievement of free men in relatively free time.

Education, information, research and promotion—these are the ingredients that give the individual his chance and his motivation to become more of the full man and to live the full life. How best can we go about making the leaders of man—every kind of leader—more conscious of what we have to offer through rich activity in leisure time? How can we make people conscious of the greatness of our country and of the part it can play in the scheme of things? Happiness and riches lie more in the things men do than in the things men have.

Recreation has a high place in our scheme of life. We are the evangels upon whose zeal much depends. With such a valuable product to sell, let us go forth with the valor of Sir Galahad: *his strength was as the strength of ten, because his heart was pure.*

## DISCUSSION

Following the presentation of the lead-off speaker, a framework for discussion was proposed. It was agreed to consider first definitions and assumptions as they applied to recreation programs and renewable resources. The Workshop would then discuss research needs and jurisdiction problems.

### Definitions

For the purposes of the Workshop, the following definitions were accepted:

*Recreation:* the constructive and worthwhile use of leisure time.

*Public agency:* an agency which is supported entirely from public funds and is responsible to the public.

*Voluntary agency:* an agency which receives funds primarily through voluntary contributions and is responsible to its membership.

*Commercial agency:* an agency which is designed to cater to leisure-time interests for private gain.

*Private organization:* an organization which caters to its membership.



### Assumptions

Assumptions, basic to the discussion were considered, amended and agreed to. They related to the nature of leisure activities, to programs and to renewable resources.

#### 1. The nature of leisure activities

(a) There will be a substantial increase in the volume of leisure available to Canadians, but the distribution of leisure will be uneven.

(b) A wide range of activities is required to meet the variations in individual tastes and needs for cultural and physical leisure activities.

(c) Sufficient disposable income will be available to a large number of Canadians to permit them to exercise a wide range of choice in their leisure activities.

(d) Both individual and group activities will be required to harvest the full potentialities of available leisure.

(e) Some available leisure will be devoted to what are commonly considered to be recreation activities, self-improvement projects and community service programs.

(f) While only a portion of the leisure-time activities will make direct demands on renewable resources, the increase in resource requirements will be substantial.

(g) As our urban centers grow, the demand and need for recreational activity will increase the need for land and water, both outside the city in natural areas (camping, boating, picnicking, etc.) and within the city (libraries, art galleries, auditoriums, civic centers, museums, zoos, aquariums, planetaria, botanical gardens, playgrounds, swimming pools, etc.)

(h) In the nature of things a very large part of recreation will be unorganized and individual; this should be encouraged and kept in mind for any discussion on resources for recreation.

#### 2. Programs

(a) Organized recreation programs conducted by voluntary and public agencies have a legitimate and important part to play in providing opportunities for constructive and worthwhile use of leisure by Canadians, in keeping with their declared and implied interests, needs and aspirations.

(b) Recreation programs include both physical and cultural activities (defined in the broadest sense) which contribute to the physical, mental, emotional and spiritual well-being of people.

(c) All levels of government have responsibility for recreation programs.

(d) Co-ordinated and co-operative efforts are required between the voluntary and public agencies and between the various levels of government if maximum efficiency and effectiveness is to be attained in programming.

(e) Recreation programs, under competent leadership can enhance the value and returns of land and capital invested in recreation facilities.

#### 3. Renewable resources

(a) In planning the development of renewable resources for recreation, the first consideration must be the needs of the people, both in individual and group activity.

(b) The supply of renewable resources in Canada available for leisure is vast, but not unlimited; first, because the distribution of pressures upon the resource base will be uneven due to the pattern of population distribution, and second, because the special resource requirements of many recreation activities are a limiting factor for supply in many areas.

(c) Private and public development of the resource base is required to meet leisure-time needs.

(d) Commercial development plays a significant role in the development of indoor and outdoor recreation facilities.

(e) Recreation programs can increase further the returns from land and capital invested in renewable resources.

(f) Programs introduced into public parklands can destroy the natural qualities of these areas if care is not taken to ensure that they are compatible with the aims and purposes for these areas.

(g) Improvements in roads and means of transportation will bring within easy reach many potential recreation areas now considered remote.

#### Research needs

It was apparent from the papers and from the discussions that much of the necessary data and knowledge upon which to base programs and policy decisions is lacking, and the matter of research and inventory-taking received attention immediately following the acceptance of basic assumptions. There was general agreement that three broad deficiencies hampered the management of renewable resources for recreational purposes. First was lack of knowledge concerning the potentialities and limitations of the supply of renewable resources and the present and future character of demand for their use. The second important deficiency was identified in the body of knowledge about recreation as a sociological phenomenon. Finally, the Workshop concluded, present arrangements for conducting research are inadequate.

Recommendations called for fundamental research into recreation, a series of inventories, and institutional arrangements which would bring the maximum concentration of research resources to bear on recreation problems.

### 1. *Inventories*

In broad terms, the Workshop proposed a comprehensive inventory in which, first, supply and demand factors are investigated simultaneously, and second, public and private leisure-time activities and facilities are enumerated, with due consideration given to commercial and non-commercial aspects.

Within this framework, the Workshop suggested four specific projects:

(a) *Recreation land use inventory*, designed to reveal the present extent, location and accessibility of public and private resources for recreation purposes.

(b) *Recreation land use capability inventory*, designed to reveal the extent and quality of the resource base throughout Canada for varied recreational development.

(c) *Historic sites and objects inventory*.

(d) *A comprehensive inventory of program facilities*, including, but not limited to, libraries, art galleries, museums, zoos, aquariums, planetaria, botanical gardens, auditoriums, civic centers and playgrounds.

### 2. *Research projects*

Research projects should both expand fundamental knowledge in recreation and explore operational problems. Some of the areas identified for fundamental inquiry were:

(a) Effects of various leisure activities on the mental and physical health of the individual and the community;

(b) Relationship of cultural and regional patterns to the chosen activities of people;

(c) Methods of knowing the real but unexpressed desires of the individual for mental, physical, social, spiritual development and fulfillment;

(d) Implications of technological developments for leisure activities;

(e) Motivations for selection of recreational activities.

To meet operational problems, the primary need is for establishment of criteria and standards:

(a) Criteria for determining programs to meet specific needs of people.

(b) Criteria for selecting and developing areas for recreational use, having regard to their carrying capacities.

(c) Criteria for development and management

of recreational resources, including criteria for capital investment per person and per acre, for management techniques and standards and for selection and training of personnel.

(d) Criteria for determining the relative roles of private, commercial, voluntary and government agencies in recreation. In addition, the Workshop singled out travel and the implications of travel patterns as a particularly fruitful area for early investigation. Travel of Canadians constitutes a growing proportion of all pleasure travel inside the country, and this has important implications for resource use and for the provision of programs.

### 3. *Institutional arrangements for research*

Workshop members were unanimous in calling for a broad and flexible approach to institutional arrangements for recreation research so that:

(a) A wide variety of social and physical scientists can make an effective contribution;

(b) Maximum use is made of existing skills and knowledge already developed in the recreation field;

(c) Effective communication of ideas is possible;

(d) Co-ordinated co-operative research between government and non-government organizations is facilitated wherever necessary.

The research necessary is of so varied a character, ranging from psychological studies and research inventories to development of equipment, that universities, government departments on all levels, foundations, voluntary agencies and associations, and commercial firms and associations should assess their respective roles and assume responsibilities.

### *Jurisdiction*

Mr. McEwen reiterated the purpose of the Workshop by restating the title "Devising and implementing recreation programs for a more effective utilization of renewable resources." He said that a master plan for action was needed, but that, before such a blueprint could be implemented, it was necessary to:

(a) Understand what we are really trying to accomplish in recreation;

(b) Sense where we are falling short in attaining our goals;

(c) Develop a master plan for action;

(d) Consider what action can be taken that will involve all agencies.

At present, he said, there is no understandable goal, no comprehensive plan, and the relative roles of government, private and voluntary agencies have never been defined.

Mr. McEwen drew attention to the tremendous growth in recreation services provided by all levels

of government, as well as by voluntary and commercial agencies. He listed some of the numerous agencies that exist in the field.

So often, he pointed out, schemes are applied from above in order to get government grants and on the local level confusion results.

His conclusions were:

(a) At each government level recreation services should be brought together, at least in the form of a clearing house.

(b) Some decisions should be made as to what the different governments should be doing, and what the voluntary agencies should be doing.

(c) Work should begin on devising the best structure to achieve co-operation toward the same ends.

Mr. Higgs, referring especially to the matter of jurisdiction, said that too often discussion of administration and jurisdiction centers on the means by which *more* organization, *more* administrative units and the transfer of *more* responsibilities to a higher authority can solve problems. It is important to consider what can be done well by existing administrative units where jurisdiction is quite clear. If an examination of the existing setup shows inadequacies which result in poor programs or ineffective use of resources, then corrective steps must be taken first at local and regional levels where the demands

and the needs of people are clearly expressed. In many cases, senior governments have provided the framework within which local or regional agencies can do all that is necessary, if the effort is made. It is doubtful in any event that the higher administrative units of government can induce people at lower levels to undertake recreational programs for more effective use of resources.

On the matters of jurisdiction and organization, workshop discussion was prolonged and, indeed, many apparently unrelated matters seemed to resolve themselves into these subjects. No comprehensive plan for recreation exists, it was said, because responsibilities are undefined and even the federal responsibility uncertain. There was a difference of opinion as to what ought to be the importance of recreation relative to other claims on renewable resources.

In an effort to resolve these matters, a tentative resolution was proposed, recommending the establishment of a Resources Council, with a recreation section charged with responsibility for studying recreation needs and for recommending necessary organization changes or innovations. This proposal was objected to on the grounds that recreation had much broader scope than could be encompassed in its relation to renewable resources. The Workshop agreed that this effort to recommend the next step had hit on a vital issue which required more deliberation, and the matter was deferred until the Friday session.

## JOINT MEETING

### RECREATION WORKSHOPS A AND B

After two days attending workshops on problem areas and on the regional approach, members of Recreation Workshops A and B reconvened in joint session Friday.

The principal item on the agenda was a statement proposed by Workshop B and considered by the two leadership groups. The statement, as set forth below, was approved unanimously by the joint meeting.

While the field of recreation is not exclusively preoccupied with the use of renewable resources, it does, increasingly, depend on access to renewable resources. Since decisions about resources are usually made on grounds that are not primarily recreational (although recreational implications are eventually involved) recreation is legitimately a concern of all who make decisions about renewable resources.

We advance the principle that the presence of recreation program people is essential at all stages

of planning and developing the use of renewable resources.

Many of the problems in this field are due to the multitude of bodies and government agencies concerned with recreation. Therefore, one of the most urgent needs is to draw together the public services at the three government levels, so that each provides a cohesive and balanced pattern of services in support of recreation. An agency devoted exclusively to servicing recreation is necessary at the provincial and again at the local level. An appropriate agency is desirable at the national level to give general focus to recreation, to assist the provinces, to conduct research, and to make recommendations to the federal government.

To be sure that all legitimate program requirements are known to decision-making bodies, joint planning and co-operative action among all the people and voluntary agencies engaged in recreation



should be attempted through the creation of recreation councils at the local, provincial and federal levels. Both public and voluntary groups should be represented.

Although in discussion a great deal of attention was given to organization, of equal importance, the Workshops agreed, was access to resources by in-

dividuals and informal groups.

The Workshops closed with a motion that the joint group express sincere appreciation to the Steering Committee for recognizing the importance of the claims of recreation on natural resources and for affording the members of the group the opportunity to participate.

# *URBAN GROWTH AND RESOURCES*

Tuesday, October 24 and

Friday, October 27, 1961

"The prevailing population trends are deeply rooted and are expressed in the creation of a new kind of community—in part intensively urban, in part suburban, in part rural-urban and in part entirely rural... But the very process of intensifying population concentration has created problems which cause the people of Canada increasing concern. There is dissatisfaction with living conditions... There is worry about the basic forces shaping urban growth... There is concern about the effect of population concentration on water... on unique recreational areas... on agricultural land... and on the human spirit... And there is widespread concern with sprawl... The challenge posed by these problems of environment and resource use has found a response in the rise of regional planning."

*L. O. Gertler, "Regional Planning and Development," Resources for Tomorrow, Vol 1, p. 395.*





# Urban Growth and Resources Workshop A

TUESDAY, October 24

Providing for urban growth without wasting  
agricultural land and other renewable resources.

- Chairman: GAVIN HENDERSON, Executive Director, Conservation Council of Ontario.
- Co-Chairman: JOYCE M. TYRRELL, Member, Community Planning Association of Canada.
- Lead-Off Speaker: A. D. CRERAR, Research Planner, Lower Mainland Regional Planning Board of British Columbia.
- Discussants: R. R. KRUEGER, Chairman, Department of Geography, Waterloo University College.  
G. R. SMITH, Director, Chemistry, Soils and Fertilizer Service, Nova Scotia Department of Agriculture and Marketing.
- Rapporteurs: JEAN CIMON, Professor, Faculty of Land Surveying and Forestry, Laval University.  
NORMAN PEARSON, Director of Planning, Burlington, Ontario.

## Lead-Off Speaker (Mr. CRERAR)

As of this morning, and subject to the assumptions which will be listed later, I would not expect to find any significant agricultural production by the year 2000 in the following areas:

The Lower Fraser Valley;

The St. Lawrence Lowlands—west of a line generally from Three Rivers to Granby, east of a line generally from Ottawa to Cornwall;

Southern Ontario—west of Cobourg, Peterborough, Lindsay; East of London, Stratford and south of a line generally from Stratford to Barrie.

These areas would be occupied by the urban agglomerations surrounding our three major metropolitan centers, Vancouver, Montreal and Toronto-Hamilton.

This forecast is based on a set of assumptions which lead to the general conclusion that urban sprawl, or scattered low density development, will be the normal form in which our cities will grow. Sprawl in turn will give rise to the scale of loss of agricultural land outlined in the Gertler and Hind-Smith and my own Background Papers.

I would submit that if this forecast is distasteful, or disturbs us, that the only way in which it can be changed is either by pointing out errors in the as-

sumptions which underlie it, or by discovering ways in which the assumptions can be changed.

## Major assumptions:

1. No nuclear war.
2. No major depression.

These assumptions are non-debatable, at least in the present context.

## Minor assumptions

The minor, debatable assumptions may be broken down into two basic types, those which accelerate a sprawling type of development and those which inhibit the resistance of agricultural land to urban encroachment.

## Accelerating factors

### Assumption one

The private motor car will remain the preferred means of transportation.

North American social history shows that what is today the luxury of the rich is tomorrow the necessity of the masses. This can be seen in the history of acceptance of the refrigerator, the washing machine and TV. Today only those at the upper end of the income range can afford to be a two, three or four car family. Before another generation has passed I

would confidently expect that every person in North America above the age of 16 will have his own personal motor car.

These cars will be able to travel farther, faster and safer in all weathers. We are in the midst of a revolution of the roads. It is little more than 20 years ago that the first road specifically designed for the capabilities of the motor car was constructed. Today the United States is in the midst of a \$40 billion road construction program, building an America fit for a motor car to operate in. I believe that this program will be no ultimate answer, but only the beginning of a matching of the capabilities of cars and roads.

#### *Assumption two*

The metropolitan regions will continue to receive at least their present share of population and industrial growth.

To support this contention are two quotations. "Dispersion, the spreading of jobs from big cities to smaller communities some distance away, has by contrast (to suburbanization) not been significant." (D. W. Slater, "Trends in Industrial Location in Canada," Vol. 1, Background Papers, p. 409.) Professor Slater noted a substantial suburbanization, "The spreading of jobs from the centers to the suburbs of the big cities," but no decentralization.

Dube, Howes and McQueen in "Housing and Social Capital" for the Gordon Commission, questioned whether "big urban places will come to absorb a very much smaller share of the national population increase. The answer suggested here is: 'No—not if the locational decision is left for industry to make'," p.22.

#### *Assumption three*

Single family housing will remain the preferred form of housing.

This is because it is:

(a) The most heavily subsidized type of housing at the federal level, (through N.H.A.), at the municipal level, through land taxes (and every municipality assiduously seeks more industrial and commercial development to reduce the tax load on single family homes still further), and at least in British Columbia, through provincial homeowner grants, (a straight \$50 annual gift to each homeowner).

(b) The only thing more poorly designed than low-cost single family housing is low-cost apartment units. The person seeking low-cost accommodation is faced with a choice between strawberry boxes or egg crates. This is not to say that very desirable apartment units cannot be constructed; they can, but it would seem only at relatively high cost. Anyone who has lived in the typical low-cost, 3 storey, stucco, frame apartment

would admit that for size, convenience and above all, privacy, the single family house gives better value for an equal expenditure. Even in visual appearance it is hard to conceive of anything more depressing than streets lined with typical low-cost apartments. At least in the single family house the individual can assert himself with shrubbery and paint.

(c) Single family housing is the logical form to accommodate the growing numbers of 2 and 3 car families which will be a natural accompaniment of a buoyant economy.

(d) It is only possible to apply current theories of child-rearing (Gissell, Spock etc.) in a single family house. For example the belief that toddlers should be able to see or readily come in to their mothers when they are playing outside.

(e) No notable "return to the city" though the last twenty years has seen a large increase in the age group best suited for apartment living, the older age group.

(f) A sneaking admiration for the large and ugly. In our culture the beautiful is considered to be somewhat effeminate, sissy and suspect; the ugly is masculine, vigorous and safe. (Note the ease with which the large and ugly is approved by committees passing on the design of public and private buildings.) I don't believe many are concerned with the way the cities we are building look.

#### *Assumption four*

Geography (or distance) will still be considered unfair and its effects erased wherever possible.

As a rule it costs more to supply such services as electric power, natural gas, piped water and telephones the farther away from the center of population you go, and the farther apart your customers are located. (Distance is a cost for any lineal service.) However the trend over the last 30 years has been away from charges on the basis of cost. Free dialing is now provided throughout the metropolitan area, and charges for gas, power and water supply are moving toward a goal of uniformity. This goal is normally achieved by overcharging central, high density areas to meet the costs in outlying, low density areas. The result is to remove wherever possible any economic differentiation (generally felt to be discrimination) between various parts of the metropolitan region. The final product is an increasingly homogeneous surface with only time-distance remaining as a centralizing geographic control. There will be increasingly fewer economic penalties for living 40 miles away from the metropolitan center, and decreasing economic advantages for living near the center.

*Assumption five*

The structure of land ownership and land pricing will remain the same.

The socialization of land would seem to be extremely unlikely, and land prices are likely to find their level in the same way that they do now. Residential land prices probably react directly to the amount of development in somewhat the same way as industrial land prices do:

Percentage of area occupied	Percentage increase in land value. (Base value at the 10% occupied level)
10	0
20	21
30	52
40	100
50	178
60	308
70	595
80	1247
90	3813

These relationships were established on industrial lands in metropolitan Vancouver.<sup>1</sup> The scale is certainly different for residential lands but the same kind of relationship is at work. It may be that the 50 per cent or 60 per cent occupied mark has to be passed before residential land values double, rather than the 40 per cent level as in the case of industrial land. But double and triple they certainly do and normally well before an optimum, let alone a maximum residential density is reached. The constant temptation is to bypass land that should be logically developed next, (since if it has evident residential potential its value will have already advanced) and head instead to an area where, ideally, (from the developer's viewpoint) the landowner has no idea that his land has residential value and has not yet increased his prices. This phenomena might be characterized as leapfrogging outward down the slope of land prices.

This price reaction is not the result of a few nefarious land speculators, it is the result of the bit of the speculator in all of us, who know that in a developing area he who can hold out the longest gets the sweetest reward.

The preceding assumptions included those which will tend to accelerate the outward spread of the city. The assumptions which follow are those which will

<sup>1</sup> See *The Dynamics of Industrial Land Settlement*, The Lower Mainland Regional Planning Board, New Westminster, October, 1961.

inhibit effective resistance to urban sprawl by outlying areas.

*Resistance inhibiting factors**Assumption six*

Really effective restrictive controls, (zoning, subdivision controls, etc.) will be impossible because:

(a) Of the howl from those excluded from the bottom step of the escalator of land prices. Not only would zoning controls prevent, or seem to prevent, the farmer from reaping his final harvest in the form of residential land prices but it might well be accompanied by rising assessed values and mill rates which accompany the transition from a rural to an urban municipality.

(b) Effective control will be impossible because of the inflationary effect of land prices of real restrictions which would seriously limit the supply of land. Increasing land prices were responsible for 55 per cent of the increase in the cost of building an N.H.A. home in the Vancouver area between 1951 and 1958, with no restrictions whatever on land supply. What would have happened if instead of 13 years supply of lots on the market (as there was) there had been only a 5 year supply? Any restrictions sufficiently severe to increase over-all density appreciably would also restrict the amount of land on the market at any one time, and bring about an advance in price. This has been the experience in the U.K. where effective controls have been established, and it should be the experience in Ottawa, within the greenbelt. For industrial land the market seems to require as much suitable and available, but vacant, land within the active development area as is actually occupied to function properly, and provide a site for every industry at a price it is willing to pay. The Gertler and Hind-Smith material indicates that somewhat the same phenomenon applies to land uses in general, with a minimum urban shadow, (land subdivided, sold or on sale for urban purposes) equal to from .6 to 2 times the amount of actual urban development and, for the largest city studied, equal in amount.

*Assumption seven*

That research into the urban structure will continue to be inhibited by the lack of basic comparative statistical information.

Economics only became as exact as it is today on the basis of available statistical material: Keynes could not have developed his general theory 10 years earlier than he did because the materials to do so did not exist. A general theory of urban development will not emerge until we have at least:

(a) A detailed comparative land utilization sur-



vey for at least a 50 mile radius around every major Canadian center, preferably in conjunction with each census.

(b) Some record of the number of unbuilt-on lots, by level of services, for at least each municipality in the metropolitan areas of Canada, preferably on a monthly or bimonthly basis. We know more on a national level about our inventories of eggs, turkeys or plywood, and on the municipal level about the civic supplies of stationery and pencils, than we do about urban land.

This lack of knowledge does not just inhibit research, the whole land development procedure normally takes place in a fog of misinformation. Supply is gauged by the seat of the pants and demand by hunches. The normal procedure is to overestimate demand and underestimate supply. This is presumably one of the imperfections of the land market that helps to explain why such massive amounts of land supply in the urban shadow seem to be necessary to balance out demand.

#### *Assumption eight*

Urban administrative units will continue to cover less than the area affected by urban sprawl, and planning and policy decisions will continue to be thwarted by divided jurisdictions.

(a) Can we conceive of an urban administrative body whose writ in land planning matters would run from London to Peterborough? From Cornwall to Three Rivers or Ottawa to Montreal?

(b) Can we break down compartmentalization? This Conference is an attempt, but at this Workshop only two agricultural people are represented, one of whom is on the platform. And how many urban-oriented people are in the agriculture Workshops? And who can blame either group when it is a full time job just to keep up to date in our own field?

(c) Governmental compartmentalization. What liaison is there or will there be between, for example, C.M.H.C. and the Department of Agriculture? Or between city governments and the Department of Indian Affairs or even provincial departments of highways? Different departments with differing objectives and ideals make continuing decisions affecting a single land base, with no referee to the effect of individual decisions on the over-all development pattern. Single-minded good answers to single problems often have unfortunate side effects. For example, rural electrification is normally considered to be a good thing, which it is, but it has the unfortunate side effect of making it possible for urban development to occur almost anywhere without regard to electric supplies.

#### *Assumption nine*

Acceptable outside sources of foodstuffs will be available, either from the Prairies, the U.S.A. or Mexico.

It is true that the greatest expansion in consumption will come in those products presently produced close to metropolitan centers. Shefrin and Menzies in their Background Paper for this Conference forecast that per capita consumption of fruit will be up 20 per cent and vegetables up 16 per cent. But flavor and freshness will command no higher premium than they do now, and hard peaches, tough peas and immature tomatoes will be perfectly acceptable as long as they "look good" and are competitive in price.

#### *Assumption ten*

The small and inefficient farmer will continue to be favored by provincial and federal supports.

The basic philosophy behind assistance to agriculture is not to assist the most efficient and competitive but to maintain as many marginal producers as possible. This is a somewhat self-evident proposition, since the most efficient producers presumably do not need government assistance to remain in operation. However examples of this attitude are that egg support prices are only available for the first 3000 dozen, and it is understood that this principle will be applied to other products; in B.C. the provincial government has announced that the first \$1000 of farm land value will be exempt from municipal taxes, which means that farms under about 5 acres will be virtually exempt from municipal taxation. The Hon. Alvin Hamilton in introducing ARDA legislation said this, "ARDA is designed, rather, to help by various means to improve the income and standard of living of the smaller and more marginal farms . . . It is not the purpose of ARDA to reduce the number of farms."

The Veterans Land Act has been a positive inducement to urban sprawl. Examination of small holdings acquired under V.L.A. at least in Greater Vancouver, shows that in about 90 per cent of the cases the acreage is not in agricultural use. It would have been far less wasteful of land if the veteran had had an opportunity to purchase a home on an urban lot with the equivalent subsidy from the government.

If we were to be kind we would say that our programs are based on the Jeffersonian ideal of the independent yeoman; if unkind, that the politician must love the small farm because there are so many of them.

The importance of this is that it has been found, at least in the Lower Mainland, that areas with better soils and larger farms show some ability to resist subdivision, and also that the transition to urban uses takes place with relatively little waste. For ex-

ample in the municipality of Richmond, which consists of a number of islands in the Delta of the Fraser River, covered with rich alluvial soil, the rate of land used for urban purposes per 1000 population added between 1949 and 1958 was 114 acres per 1000. On the poor quality soils in the uplands of Surrey and Delta the rate per 1000 population increase was 345 to 360 acres respectively. The larger and more efficient farms on better soils seem to have some ability to resist urban penetration, and land seems to remain in productive use for a longer period. This is not to imply that even the better farms can resist urban development indefinitely; they can not, but they do seem to have a somewhat higher "shatter point" than poorer farms.

Any policy which seeks to maintain the small and inefficient producer might keep him in existence just sufficiently long for him to be taken over by urban development. Merger and consolidation might produce a stronger, more efficient unit which could resist urban encroachment somewhat better.

#### Summary

In our discussions today and during this Conference I would hope that you will point out where my assumptions are in error, where they seem to be correct, and how they might be changed. Unfortunately those assumptions that might be changed most readily are probably those with the least influence on the broad course of events, and those with the most influence are also the most difficult to change.

One further note of caution. Let us be certain that any solutions that we propose do not in themselves give rise to new problems, for as we have seen, many of the forces that underlie urban sprawl are themselves the result of solutions to past problems.

#### Discussant (Mr. KRUEGER)

I concur with Mr. Crerar's prognosis that by the year 2000 agriculture will be insignificant in the areas designated; the Lower Fraser Valley, part of Southern Ontario and part of the St. Lawrence Lowland.

I would argue about the exact boundaries in Southern Ontario and the St. Lawrence Valley, but I would agree that the agricultural industry will be ruined in those general areas if present urban development and sprawl patterns continue for another 40 years. Unfortunately these areas include some of the best agricultural land in Canada, particularly for such specialty crops as orchards, vineyards, small fruits and vegetables, and tobacco.

All this land will be lost to agriculture not because cities need that much squatting space, but because sprawling urban land use ruins, for agricultural purposes, several times the land that is actually used. The land within the urban shadow is spoiled for

agricultural purposes (or the agricultural productivity is greatly reduced) in a number of ways:

- (a) Speculative ownership which often results in idle land;
- (b) Non-farm ownership which often results in lower productivity;
- (c) Short-term leases which destroy the incentive for sound farming practices;
- (d) High land prices which discourage farming and encourage selling of lots and subdivision to non-economic sized units;
- (e) High land taxes to subsidize the intruding urbanites.<sup>2</sup>

In Ontario, the Conservation Council has estimated that cities will require 1.5 million acres of land by the year 2000. Gertler and Hind-Smith<sup>3</sup> have found that around even a relatively compact city such as London, Ontario, for every acre used there are two acres which fall under the urban shadow, i.e., undeveloped subdivisions, non-farm ownerships, farmland for sale, and non-farm tax assessment. If one applies this 2:1 urban shadow ratio, then by the year 2000 there will be 3 million acres of land spoiled for agricultural purposes, in addition to the 1.5 million used. This total of 4.5 million acres is well over one-third of the amount of prime agricultural land in Ontario.

The loss of farmland means not only the loss of food production, but also the loss of the food-processing industry based upon it. For instance, the fruit and vegetable-processing industry based on Niagara production alone, has a plant investment of approximately \$14 million, annual gross sales of \$26 million, and annual wage and salary payments of \$5 million. It would be extremely interesting to compute the economic pyramid based upon the agricultural regions delimited by Crerar.

At this point I would like to comment briefly on Martin Sinclair's Background Paper on the Niagara Peninsula. It is unfortunate that the Community Planning Branch excluded from its study Saltfleet Township which contains about one sixth of the total Niagara fruit acreage and which is rapidly being overrun by the suburban sprawl of Hamilton. If Saltfleet were included, then the loss of tender-fruit soil between 1954 and 1958 would be approximately 2,100 acres, or 525 acres a year instead of the 322 acres a year as given in Sinclair's paper. At this rate,

<sup>2</sup> For documented proof of the fact that the farmers have to bear the brunt of the cost of services required by urban people who move into a rural community see: Barker, A. J. *Urban Drones in Rural Hives*, London and Suburban Planning Board, 1949; and Krueger, R.R., *The Rural-Urban Fringe Tactation Problem: A Case Study of Louth Township*, Land Economics, August, 1957.

<sup>3</sup> Hind-Smith, J. *The Impact of Urban Growth on Agricultural Land: A Pilot Study*, Supplementary Background Paper prepared for "Resources for Tomorrow" Conference, 1961.



by 1980 cities will have used approximately 11,500 acres of tender-fruit soil. If one again applies the conservative 2:1 urban shadow ratio, an additional 23,000 acres of tender-fruit soil will be ruined for agricultural purposes by 1980. The total used and spoiled will be 34,500 acres. This projection would leave only 3,000 acres of tender-fruit soil for peach growing by 1980. But the rate of urban growth is likely to accelerate, and the tendency toward a low-density sprawl pattern is increasing each year. On the basis of the facts now available I feel that I must revise the forecast I first gave to the Conservation Council of Ontario in 1958, that the Niagara Fruit Belt will disappear by 1980. If current trends continue, the Niagara Fruit Belt will disappear as a major tree-fruit area long before 1980. In fact, unless effective regional planning is established before 1965, it may be too late.

It should be pointed out that if the urban areas were to grow in a more orderly manner, and if the urban-shadow effects on agriculture could be eliminated, the urban growth which I have just projected could take place in the Niagara Fruit Belt without seriously reducing fruit production. There is room for both people and peaches.

(Professor Krueger then commented on Mr. Crerar's assumptions on the factors that accelerate urban sprawl.)

On the assumption that acceptable outside sources of foodstuffs will be available, he said Canadian problems must be viewed in the world perspective. The population of the world had doubled since 1900 and would double again well before the year 2000. He forecast that Canada would be one of the last food surplus producing countries of the world. From whom will Canada import food in the year 2000? Professor Krueger asked. He quoted Dr. Patterson of the Farm Economics Branch, Ontario Department of Agriculture: "We will not be able to afford the luxury of being meat-eaters; we will become a nation of cereal-eaters."

He said it was true that Canadian agricultural lands could produce twice as much if modern technological methods were applied, but this was of little use if there were no land left to which the technology could be applied. He also pointed out that technology is most effective on the best agricultural land, and this is the land which is being destroyed needlessly by uncontrolled urban sprawl.

He disagreed with Mr. Crerar's assumption that the better soil has some ability to resist urban penetration. When urban pressures rose to a certain point, the quality of the soil had no effect at all on urban expansion. A developer seeking land priced at \$10,000 or \$20,000 an acre did not care if its agricultural value was \$100 or \$1,000 an acre. He cited the Martin H. Sinclair Background Paper on the

Niagara Peninsula which stated that 60 per cent of the urban expansion between 1954 and 1958 was on the most productive tender-fruit soil of the Niagara Fruit Belt.

The private car would be the preferred means of transportation only if we continued to do everything possible to inhibit mass transportation. In Toronto it appeared that an auto expressway was being planned in conjunction with a rapid transit system to assure that the public transportation system would not succeed. He quoted from Edward Higbee's book *The Squeeze*: "A single railroad track used for trains that stop briefly every one to three miles is worth 23 lanes of turnpike or elevated express highway. To replace one double tracked railroad entering a city would require 46 lanes of Chinese Walls. It would be amusing to contemplate, if the situation were not so tragic, why it is that cities are literally performing *hara-kiri* by ripping open their bowels with elevated highways at fabulous cost while railroads, which already have rights-of-way into the hearts of cities, are going out of passenger business."

To the categories of information required to provide basic comparative statistics on urban land and resources that would help rural areas resist urban encroachment, Professor Krueger added the following:

1. Amount and nature of land being used or being forced out of agricultural use (directly or indirectly) by Canadian cities and towns and transportation facilities.

2. Amount, nature, and location of highly specialized agricultural resources in Canada, e.g., fruit land, truck-farming, cob-corn, soya-bean and tobacco areas.

3. Amount and quality of water and recreational resources around our cities.

4. Locational factors of all types of industry; industrial potential of different regions of Canada, and of various areas within each region, to determine the economic feasibility of directing some of our future urban development to land with favorable industrial potential but low agricultural potential.

5. Economics of different patterns and densities of urban growth; establishing city-size breaking points (what are the various optimum sizes for different types of cities?).

In order to facilitate such research, he suggested:

1. Establish a quinquennial air-photo census to assist in determining exactly what is happening to land uses in the densely populated areas. This air-photo census should coincide with the existing five year census so that statistics can be correlated with effects on land use.

2. Set up a non-political national social science



research board to encourage pure and applied research in the field of resource development, conservation, and land use planning. This board could initiate research; act as a clearing house for researchers; give technical and financial assistance to individuals and groups engaged in planning and resource development research; supply funds for research by universities; offer scholarships to attract keen students into university programs in planning, economics, political science, geography, sociology, and other programs where the student's aim is to pursue a career in planning or in government work related to planning, municipal affairs or resource development.

Professor Krueger said other factors which accelerated urban sprawl were lack of urban redevelopment; the public lack of appreciation of the diseconomies of urban sprawl; and the permissive nature of planning legislation in most areas.

Professor Krueger doubted that regional planning could evolve soon enough through the local co-operative efforts of municipalities. He said that in the Niagara Peninsula there had been more than 30 annexation fights in the last six or seven years. By the time the municipalities agreed to co-operate, it would be too late to do effective regional planning.

"Senior governments must give bolder leadership in the realm of urban and regional planning," he concluded. "The best planning legislation in the world will do us little good if it is not used."

#### Discussant (Mr. SMITH)

I agree with that portion of Mr. Crerar's statement regarding the motor car which reads "go farther, faster," but statistics up to this point do not indicate that this means of transport will be safe in the future under all weather conditions.

Regarding the movement of industry to suburban areas, it has been true that in the past there has been more of a tendency on the American continent for industry to move to the suburban areas rather than to decentralize. Decentralization of industries has occurred to quite an extent in parts of Europe and as we become more aware of the dangers that accompany the nuclear age, we may see a much greater tendency, particularly for large industry, to become more decentralized.

I believe that more and more suburban dwellers are beginning to measure the real costs of travelling to their places of work. As an example, Don Bird, the Director of Community Planning in Nova Scotia, calculated that to live in Sackville and work in Halifax, approximately ten miles away, would cost him approximately \$8,000 for travelling in a 20-year period.

We should very seriously consider whether single family housing is more heavily subsidized than low-cost, municipally owned apartment houses.

The European concept is that in urban renewal plans, apartment houses should be built in downtown sections so that employees will live near their places of work.

We must agree with the general idea that what is required is more people who can examine a region from a multiple resource viewpoint.

Mr. Crerar worries considerably about urban sprawl taking over agricultural lands. I do not believe he considers fully the available land that can be developed in Canada.

He is unfair in saying that the philosophy behind the assistance to agriculture is to maintain as many marginal producers as possible. Actually, the biggest bargain that the consumer gets today is in food products and a great part of the increases in foods have not been paid to the primary producer but compensate for "built-in maid services."

## DISCUSSION

The Workshop agreed to the following basic assumptions as guidelines to discussion:

That from the point of view of the long-term economic and social welfare of the nation it is important to:

1. Know the facts about the direct and indirect effect of urban growth on agricultural land and renewable resources generally, and understand the economic, political and administrative forces shaping the present pattern of resource use in and around urban centers.

2. Consider ways and means of guiding urban development with a view to:

- (a) Fulfilling economic potential in urban-

centered regions by promoting patterns and forms of urban expansion which (i) maximize the economic and social efficiency of the city and (ii) minimize the destruction of the most productive farmland and other open space of recreational value.

- (b) Encouraging industrial development on land which has favorable industrial but low agricultural potential.
- (c) Preserving recreational resources, e.g., natural open space formed by shorelines, ravines, escarpments and valleys in and around cities and towns.

- (d) Ensuring a healthful, satisfying and stimulating environment.

These questions were put to the Workshop:

1. What is the present situation with respect to the loss of farmland and other renewable resources due to the direct and indirect effects of urban growth?
2. What is the problem from the point of view of meeting the future needs of a growing urban population for food, water, and recreational areas?
3. What are the factors underlying the present patterns of development? Are they controllable?
4. What are the essential elements of a planning program aimed at accommodating growth without waste of resources?

Before breaking up into two groups the Workshop discussed Mr. Crerar's hypotheses. The main points emerging from this discussion were:

1. It was agreed that present mechanisms of city-building are seriously imperfect, especially in relation to the amount of resource waste which apparently occurs universally in urban territorial expansion across Canada.
2. Urban territorial expansion exerts a profound and disturbing influence on agricultural land use in areas surrounding cities.
3. There is an urgent need to examine the ecology of decision-making in relation to urban growth.
4. There is a real and unexpressed need to sustain a human environment of quality all across the Canadian urban and rural scene.
5. The real costs of the phenomenon of *journey to work* should be studied.

### SUBGROUP A1 DISCUSSION

#### *Crerar's hypotheses*

Subgroup A1 discussed Crerar's hypotheses and rejected all of them. The group found that the car was no longer a "status symbol" and its prevalent use reflects probably no more than a lack of a more efficient and satisfying means of transportation. The metropolitan form will be defined by use of all means of transportation.

In considering the assumption that the single family dwelling will remain the preferred dwelling unit, the group questioned the policies of the federal government which favor the construction of single family dwellings. Single family units generate vast land demands and emphasize the need for cars, but do not reflect the real needs and wants of the population or its characteristics and structures.

It was agreed that the effects of geography would not continue to be erased since there could be adjust-

ment. The cost of service was an important tool but it was now being used irrationally.

#### *What is the present situation?*

The group then addressed itself to a discussion of the first question: What is the present situation with respect to the loss of farmland and other renewable resources due to the direct and indirect effects of urban growth?

The group agreed that little if any direct approach had been made to this problem. It appeared that the loss of agricultural land does not seem to constitute a serious problem so far as total food supply is concerned. Yet special assets such as the Niagara Fruit Belt, or the wide variety of recreational assets, are in much more danger than was originally surmised. Sprawl is apparently equally detrimental to urban form and rural structure.

These phenomena appear to be universal, but the solutions may be regional. We need to know much more about all aspects of the problem than we do now; national, regional and special aspects require deep and penetrating research.

The trends were felt to be irreversible to the extent that conventional boundaries have been broken. Town and country are not seen as antitheses. The problem of the future is to see urban growth and maintenance of good land resource policy as man-and-wife.

#### *What are the underlying factors?*

The group identified a number of factors underlying the present patterns of development.

#### *1. Administrative fragmentation*

The only method of overcoming administrative fragmentation, in the opinion of the group, was regional planning. While the group could not agree on the means (whether this should be imposed regional planning with or without administrative responsibility) it was agreed that regionalism might begin with (a) study areas (b) which become control areas and (c) are eventually transformed into administrative areas.

It was pointed out that metropolitan government is a universal necessity across Canada. It was felt that if regions were grouped first by resource analysis, administrative expression might be easier to achieve on that basis.

#### *2. Conflict between private gain and social costs*

It was agreed that sprawl is a most costly form of urban development. The primary economic cause was identified in these terms: sprawl in its occurrence is of economic benefit to many individuals who enjoy its personal consequences, but society pays the bill. Studies of the impact of sprawl may help reverse

the apparent economic attractiveness. It was felt that there should be an attack on unearned increment resulting from real estate speculation. The capital gains tax was suggested but did not meet with general agreement.

In pursuing the question of speculation the group agreed:

1. This is a national problem which can only be fought at national and provincial levels.

2. Land is now regarded as a commodity; it is however a resource.

3. This problem may be irrelevant in isolation, but since "planning is not politics but is a political activity," this becomes a political question.

4. Land used improperly because of speculation and lack of planning aids further speculation.

5. Land is basic to existence but public ownership is probably not acceptable; it may be a solution. Other possible solutions are: unearned increment taxes; outright purchase of land needed for development; and purchase of development rights.

### 3. Failure to present the public with real alternatives

Facing the facts that we can not tell suburbia to stop and that adjustments in tax rates may be difficult, it was also suggested that higher urban densities may be more feasible and the real needs and wants of people (as opposed to the "Madison Avenue" wants) met better by a concerted effort to learn how to build real cities—places with civic pride and an attractive environment in all senses of the word.

Some members felt that this was a long-term educational process. Others felt that facilities provided now were more important, and some thought there is little choice for city dwellers with the restricted types of urban environment now offered.

### *What are the essential elements of a planning program?*

The opinion was expressed that Canada has an almost complete lack of actual planning. Much support was expressed for the view that planning effort is frustrated by seeking to correct things already wrong, or "patching." Once again a *direct* approach was recommended:

1. The logical beginning—to define national planning aims in relation to:

- (a) Resources and provincial planning;
- (b) Land;
- (c) Compensation and betterment;
- (d) Correlation of department policies;
- (e) Regional planning objectives.

2. Proceeding thence to encourage, within the constitutional framework (which appears to be flexible enough) provincial plans, in particular ensuring co-

ordination between all agencies concerned with resources, and studies of desirable regional structure.

3. Within this framework of policies, regional plans should provide the background to treat statutory schemes.

The group in discussion agreed on the need for the regional concept and on the need for defining and establishing regional entities.

## SUBGROUP A2 DISCUSSION

### *Crerar's hypotheses*

It was agreed that the basic assumption made by Crerar that the present system of land ownership will not change substantially in the immediate future is correct; but that other influences will affect the present system of development. These may be:

1. Government administrative policies such as zoning and taxation.

2. Changes in the present system of subsidizing services in outlying areas.

3. Some leasehold tenure of land, particularly in connection with multiple family housing units.

4. More federal-provincial housing and land assembly schemes.

5. Changes in taxation systems, allied with re-tightening of assessment practices.

6. Acquisition of some land by municipalities and its sale, at cost, in competition with developers, the land often being purchased in conjunction with land acquired for roads, utilities and other municipal purposes.

7. Making available accurate information respecting the amount of land on the market, and injecting this information into the marketing machinery.

8. Use of development zones, e.g., the city of London, Ontario.

9. Master plans for areas larger than present municipal units, which would enable governments to view individual development schemes in perspective.

10. The full use of present legislation.

The group questioned Crerar's assumption (No. 10) that agricultural policy favors the small, marginal producer. They discussed the actual and probable effects of subsidies, irrigation projects, freight rate assistance, and ARDA. In conclusion it seemed that all existing measures tended to help the large-scale, non-dryland farmer most and should theoretically increase resistance to urban encroachment on agricultural land.

### *Urban shadow*

It was noted that it was implicit in Crerar's paper that the problem of urban shadow is and will be a



phenomenon related to big cities. This may be most apparent now because more evidence has been collected in regard to this problem in metropolitan areas. However, there is undoubtedly an urban shadow around small cities. It may be, and probably is, a fact that the total urban shadow produced by the latter is greater than that produced by the former. If our aim is to minimize the loss of land in production, it will perhaps be better to concentrate development in metropolitan areas where higher densities, mass transit, etc., are possible. However, it may be that the most suitable land for urban development is in areas where the land is also best for agricultural development. It is therefore necessary to weigh carefully, on the basis of *accurate statistical information*, the comparative cost of (a) developing land for urban uses in terms of, for instance, sewers through loam or rock; (b) the cost of replacing and using land taken out of agricultural production; and (c) increasing agricultural production on land left for such use.

In connection with the possibility of the *return-to-the-city* movement it was established that, even if this assumed massive proportions, the increase in population and the need for more space for child-rearing families would far outstrip the land "saved" by those returning to the city. In any event there is a discernible trend on the part of the Central Mortgage and Housing Corporation and other agencies to advance money for the construction of dwelling units suitable for families who do not require a single family detached house.

Quite possibly the ratio of vacant land to the area of urban development will decrease from 2:1 as the need for agricultural production increases and the total amount of agricultural land becomes less.

#### *Research and statistics*

It was generally agreed that a great deal of statistical information was available. However, its existence was unknown to many and much of it could not easily be interpreted in areas where no electronic processing equipment was available.

It was hoped that the proposed Canadian Council on Urban and Regional Research would be able, on a national basis, to:

1. Ascertain the amount and location of existing information;
2. Inform all agencies using statistical information what was available and where;
3. Obtain details of the information needed by all agencies and inform the data collecting agencies what was required.

In this regard the following resolution was unanimously adopted: That all government agencies connected with the collection and analysis of statistical

information be requested to give unstinting support to the new Canadian Council on Urban and Regional Research.

It was generally agreed that aerial photographs should be taken around at least the 17 metropolitan areas in Canada as part of the census. The exact type of photograph that would be most useful to the largest number of agencies would be difficult but not impossible to ascertain.

#### *Area and regional planning*

Area and regional planning was discussed and the following ideas stated:

1. The provincial governments, as the largest (apart from the federal government) policy-making and administrative units, should exercise more fully and wisely the powers now available to them, so that gradually municipal units might amalgamate into more logical units within the framework of a provincial plan.

2. Regional planning units should be set up, ultimately to become not just advisory but policy-making and enforcing agencies. These might be something similar to existing revised county areas; a completely new form of units; a unit similar to the District Commissions in Alberta; units similar to those being studied in Saskatchewan, where it may be that over 300 municipal units will be reduced in number to 65; or various unit-types tailored to fit the areas in which they are situated.

3. A great deal of work is now being done by agencies that are really regional in character, e.g., conservation authorities, police, highways, hydro, etc. These are accepted by the public as reasonable and necessary. If the public could be shown that planning, on a scale that was logical for the area involved, was the reasonable answer to development, redevelopment and resource conservation problems, it would accept planning on the scale required.

4. A most encouraging start has been made by the Niagara Regional Development Association consisting of many municipalities who wanted to produce a joint study of the area.

#### *Sprawl*

An attempt was made to produce a definition of sprawl and to state why it was happening. Sprawl is the outcome of unplanned and haphazard development that cannot be integrated into any rational plan for economic and satisfying development in the future. Low-density development in suburban areas is not necessarily sprawl. It may be expensive in some ways, but if such densities are desired perhaps the cost of them is justified.

Sprawl often consists of ribbon development. This

does not provide a satisfactory environment for living or commerce and results in the lowering of the efficiency of the traffic facility it borders.

Sprawl is bad when it is uneconomic and encroaches on land that is needed in order to preserve more essential resources. Sprawl results from such things as:

1. A desire to escape unpleasant situations in the city, either real or imagined.
2. A desire to obtain cheap accommodation,

which often turns out to be substandard housing.

3. A desire to live in spacious estate-like surroundings in an expensive mansion.

To combat sprawl a two-pronged attack is essential:

1. Effective land development control must be exercised.
2. Housing that is pleasant and financially acceptable to all income groups must be made available.

## URBAN GROWTH AND RESOURCES WORKSHOP A

### REVIEW AND CONCLUSIONS

Friday, October 27

On Friday the Chairman introduced the session by stressing the purposes: to review what had been achieved in workshops and bring forth problems which have been identified, such as the need for research; urban shadow and its effect on future food requirements; the need for emergency measures to deal with critical situations (e.g. recreation lands, Niagara Fruit Belt); and the need for regional planning.

#### *Urban shadow and future food requirements*

Dr. L. H. Shebeski, author of the Background Paper, "Implications of Technological Change for Agricultural Productivity," was called to clarify the group's discussion on the matter of loss of agricultural land. He challenged "surplus food" arguments, was troubled about "irreversible" losses, felt a false picture was presented due to land being liberated by loss of horses, noted the tendency to underestimate land needed for livestock production, was not worried about our capacity to feed ourselves in the long term, and stated that increases in productivity were mainly effective on the best land, which should be kept and the marginal land withdrawn. It was his opinion that very soon such land will be essential for food production.

The Chairman asked Dr. Shebeski about Van Vliet's viewpoint on surpluses. Dr. Shebeski stated that we do not now have one year's normal carry-over of food; another bad year like 1961 may make us unable to meet market commitments and might even make us importers; Winnipeg has lost 20,000 acres of farm land in 5 years; we are now increasing the tempo of urban sprawl.

It was agreed the issue was a question of choice: we do not *need* to destroy valuable resources and thus we should not act thoughtlessly. The possible

effects of lost agricultural production on Canada's international economic position should be reviewed. The loss of our best land can only cause a higher cost economy. The present "natural" patterns of urban development are high-cost patterns already, being neither compact nor rational. Cities sprawl over areas far greater than necessary. An attempt to create new satellites might be beneficial for both the saving of good land resources and for the urban form itself.

Langlois' economic study of the urban shadow in Montreal indicated that 80 per cent of the land removed from agriculture was held speculatively. It was agreed that the waste of agricultural land due to urban growth is of great concern. Individually, operations in land development are "economic" to those directly concerned, but private gain is not necessarily public gain. The real social costs of development are hidden.

Recently in central areas the realization has spread that urban development can gain by concentration; this may ultimately apply in over-all development. It was agreed that sprawl is a costly form of urban development and that research is needed to evaluate the real social costs of sprawl.

#### *Research*

The scope of the proposed Canadian Council of Urban and Regional Research, it was agreed, should include: a clearing-house function; expansion of the general area of research; dissemination of data (service function); and aid to existing institutions.

Concern was expressed over the lack of facilities for training research workers in this field. We do not know enough about the actual processes of urbanization; the attitudes involved, the cultural processes, and the real needs must be established in this greater

context. It was agreed that there should be greater support for the universities in meeting this need, particularly in the neglected social sciences field. There appears to be a lack of awareness of this need even among key people.

Recreation land was recognized by the group as a national resource, and guides and standards are needed to aid the whole field of recreational resource planning.

There was also a need for standardized comparable base notations and modes of presentation, collection and reporting of urban and resource research data.

It was agreed that the land use sheets for major urban areas produced by the Geographical Branch should be completed. This is apparently not a costly program, and would be of great value.

The Workshop agreed that all government agencies connected with the collection and analysis of statistical information be requested to give unstinting support to the new Canadian Council of Urban and Regional Research.

There is a great need for a professional cartography research committee to explore such questions as: what data should be on map sheets; what scales should be used for what purposes; what symbolism should be used.

The Workshop agreed that the Tax Foundation should study taxation and assessment problems connected with urban growth and resources.

The recommendations of the Research Workshop were endorsed by this group, including:

1. The co-ordination and acceleration of present federal, provincial, municipal and private survey and research activities in order to gather as quickly as possible information on the physical, socio-economic, cultural and political facts about land uses as affected by urban growth.
2. Fuller use of existing government research agencies, facilities and programs in attempting to remedy these deficiencies.
3. Establishment of an appropriate national agency to:
  - (a) Collect and distribute the results of the various research activities of governments, universities, industries, research firms and individuals;
  - (b) Analyze and interpret information collected in order to formulate principles of land use;
  - (c) Stimulate research to help fill in the gaps;
  - (d) Provide research funds to universities to carry out pure and applied research (social sciences) as it pertains to urban land use problems.

### *Emergency situations*

Emergency situations fall into two main types: economic assets (e.g., Niagara Fruit Belt); and recreational assets (e.g., wildlife resources).

The possibility of loans from the federal and provincial levels to the municipal level to purchase recreational lands was suggested. The problem is to provide in a very short period the sort of recreational opportunities much older societies have been able to add to their urban amenities over a very long period.

There is need to examine the means at the national level to write off the urban land values in areas which are needed for recreational or open-space uses. Essentially this is a compensation betterment problem, which could be approached by means of outright purchase, compensation for "freezing," or leasehold.

### *Regional planning*

There is a need for the regional approach and for regional planning because of relationship of uses, competition of uses for one resource, interaction with local economy, relation between resource use and the community, relation between the community and upper levels of government.

The Workshop agreed on needs for regional plans within a provincial context and called for such plans to be framed in a "strategy for growth."

Different areas have different needs. Nevertheless there are certain essentials, e.g., constant and regular communication between the different levels and between the specialist disciplines involved.

The following essentials of regional planning were identified:

1. Survey and analysis should cover the area affected.
2. Results should be communicated to a body that can co-ordinate policies and put them into effect.
3. Those responsible for implementation must be identifiable and responsible to the electors.
4. Statutory authority must be provided.

A distinction was made between regional planning which is building the city into the urban shadow (a strong executive function) and regional planning in the rural areas which involves much more co-operative and correlated activity.

There was general agreement that regional planning in the most critical areas is far from adequate, and that there is a need for positive provincial action and statutory authority.

Provinces already tend to have plans for specific functions (e.g. highways) but such activities should be co-ordinated (preferably at Cabinet level) into one effective correlated provincial plan. Provinces, it was suggested, must use existing legislation to the fullest effect in pursuit of national objectives.

The information problem was to get data out to municipal and other officials. A need was recog-



nized for studies of public attitudes and preferences, which again may be encouraged by the proposed Canadian Council of Urban and Regional Research. All forms of research bearing on the

problem should be pursued. Information as to the availability of existing developed land must be widely disseminated and injected into the market machinery.



# Urban Growth and Resources Workshop B

TUESDAY, October 24

The control of air pollution generated  
by the growth of cities.

- Chairman: PIERRE CAMU, Vice-President, St. Lawrence Seaway Authority.
- Co-Chairman: CHARLES NEWBURY, Air Pollution Consultant, Toronto.
- Lead-Off Speaker: M. KATZ, Air Pollution Consultant, Officer-in-Charge, Environmental Assessment Unit, Canada Department of National Health & Welfare.
- Discussants: H. L. HOGGE, Director, Division of Sanitary Engineering, Alberta Department of Public Health.  
ANDRÉ LECLERC, Professor, Polytechnical Institute of Montreal.
- Rapporteurs: GEORGE POTVIN, Assistant Professor of Human and Economic Geography, University of Toronto.  
HUGH T. LEMON, Planning Secretary, Metropolitan Toronto Board of Trade.

## Lead-Off Speaker (Mr. KATZ)

### (Summary)

The lead-off paper by Dr. Katz was a Background Paper "Air Pollution as a Canadian Regional Problem."<sup>1</sup> The paper provided a detailed account of the nature, trends and sources of pollution; research activities; control legislation and jurisdictional aspects; standards for ambient air quality; emissions from car exhausts; the technology of prevention and control; and planning and zoning to control air pollution.

The following extracts of the final section of Dr. Katz's paper, Planning and Zoning, summarize his major conclusions.

Today, the regulation and control of air pollution is a recognized practice in many urban areas. The introduction of efficient methods of combustion and gas cleaning equipment for the collection of dust, or scrubbers for the removal of gases has reduced pollution levels but this trend has been offset by population growth and the continued expansion of industrial and public activities. There are only two possible ways in which atmospheric waste products can be controlled—(1) by collection or removal at the source, (2) by dilution and dispersion in space and time. Most authorities will agree that it is theoretically

possible to remove nearly all objectionable particulate and gaseous effluents from industrial stacks but the attainment of this objective may be unrealistic on economic grounds. Costs of recovery and disposal of waste products rise rapidly at higher efficiencies and may become prohibitive beyond 95 per cent removal. Intelligent planning and zoning of land use, therefore, must be undertaken in order to maintain the balance between industrial expansion, opportunities for employment and the prevention of adverse levels of pollution that might create corrosion, nuisance, crop damage or health problems.

### Basic considerations

Some conception of the basic requirements for sound city planning and zoning may be gained by a glance at conditions which arise in the absence of any plan or design for community development. Small businesses and industries invade residential areas; these begin to deteriorate, lose property values, and decay. The expansion of industrial plants into areas settled by workers eventually drives these workers to seek living accommodation in other sections of town many miles from their work. On the other hand, homes may grow up inside factory districts. Instead of compactly organized neighborhoods with appropriate business and shopping centers, ribbon streets or narrow, intermixed communities may stretch out for miles. Uncontrolled smoke, dust,

<sup>1</sup>For the full text see *Supplementary Background Papers, Resources for Tomorrow*, Queen's Printer, Ottawa, 1962.



fumes, and odors accelerate the deterioration of such haphazard and disorderly developments and create blighted areas.

It is almost an axiom, therefore, that city planning must be continuous, flexible, and adapted to the local requirements. It must be based on correct and sufficient data to anticipate the growth trends and changes in living habits which the city will undergo in the near future. Provision must be made for transportation, traffic and parking facilities as well as accommodation for industry, commerce, homes, and apartments, so that the city can grow without sections being blighted and ultimately having to be reconstructed at enormous cost to the taxpayer.

To implement a plan conceived by a competent commission or authority, a zoning law is required to define the permissible areas for all functions of the community, such as light and heavy industry, business or commerce, parks and playgrounds, warehouses, office buildings, apartments and dwellings. Many cities with good zoning regulations have nullified them by granting exemptions whenever sufficient pressure has been applied to permit land use not in conformity with the regulations. Each city requires its own zoning ordinance, and it must fit the local conditions. As land usage changes, the zoning regulations must be modified to meet new conditions. Rural or suburban areas bordering a city must also be subjected to zoning to promote orderly growth.

The effects of air pollution on future zoning are being taken into consideration by some city planning commissions. Thus, proposals are under study to zone industry on the basis of the nature and extent of the emission from each plant rather than by the type of manufacturing process or operation. This provides an incentive for improved pollution control in the design of a new plant, because a more desirable site may be available if the plant can meet the stack-emission and other requirements in the preferred zone. As more information is gained about the effects of specific contaminants and the levels of ground concentration which may be permissible with respect to each type of waste product, zoning ordinances will contain performance provisions on specified permissible contamination limits rather than indefinite terms such as "detritmental, noxious, or offensive." The regulations would be more helpful to industry if positive performance standards for various classes of operations were required instead of being expressed in terms of what may not be done. However, the drafting of such performance zoning regulations requires a high order of technical skill and knowledge on the part of air pollution control agencies or planning bodies. At present, factors such as stack height, velocity and temperature of stack gases, wind velocity, and prevailing meteorological

conditions in a given neighborhood are neglected in the setting up of control regulations based on permissible stack concentrations or, as in Los Angeles County, emission standards are based on process weight per hour (mass rate of emission).

With the continued growth of cities and industrial communities, air-pollution control is assuming increasing importance in planning and zoning. Meteorological and topographical factors must be taken into account in the location of industrial and residential areas. It is essential to protect industry from the unreasonable encroachment of residential developments, and vice versa. In future planning and zoning, land use for certain types of industrial operations will depend on the extent to which such plants can control objectionable contamination. Area zoning will include more extended use of land for public parks, gardens, and wooded tracts to prevent overcrowding of sources of emission.

#### *Industrial site selection and zoning*

In planning the location of an industrial plant, the factor of air pollution control must be included in the basic considerations which have to be assessed by modern plant management. No longer is it sufficient to consider only the availability of raw materials, labor force, transportation, water supplies, and markets. Past neglect of air pollution planning has proved to be a costly error for many large undertakings which have been faced with expensive damage claims, litigation, and the necessity for the installation of control equipment after several years' operation. It is usually much simpler and less expensive to provide for control features in the design stage than to be compelled to add these after the plant has been constructed and placed in operation.

If the new plant is to be located in an area which is already industrialized, it is sound practice to undertake a pre-operational survey to determine the existing levels of contaminants under prevailing meteorological conditions. The results of such a survey, in conjunction with known operational data on the scale of contemplated emissions from the new sources, would provide information on the extent to which waste products could be safely discharged to the atmosphere without producing too much contamination. An intelligent appraisal of the problem requires a knowledge of the specific effects of the major contaminants to be discharged to the atmosphere in relation to the topography, population, and land use of the area surrounding the site. Certain contaminants are more toxic to vegetation and animals than to people. A rural and agricultural area is more sensitive to sulphur dioxide and fluorides than is an urban community. Hydrogen sulphide has little effect on vegetation but is obnoxious and even dangerous to human life in comparatively low concentrations.

A preliminary air pollution survey is also useful if the site to be selected is located in a suburban or rural area. Frequently, the area under consideration is subjected to exotic pollution, i.e., contamination from distant sources. It is important to establish what these concentration levels may be in relation to the proposed scale of operations. Suspended particulates, fluorides, sulphur dioxide, and other gases may be carried great distances from large industrial communities to predominantly rural areas. The existing conditions may be tolerated by the rural dwellers until a new plant commences activities in the immediate neighborhood.

The ideal site for disposal of airborne wastes is comparatively level terrain in a region where the average wind velocity is of the order of 10 mph or more and where deep temperature inversions are a rare occurrence. An additional advantage is gained if the site is not upwind of valuable farm land or a populated community. The plant-site property should be large enough so that maximum concentrations of effluents, at ground level downwind, occur well within company premises rather than on surrounding private property. Valley sites require more pollution control than level or undulating terrain, especially when the average wind speed is less than 10 mph. Stacks must be tall enough so that the effective height of the plume will permit atmospheric wastes to be carried out of the valley rather than to be trapped below the level of the surrounding hills.

A large power plant burning 5,000 to 10,000 tons of pulverized fuel per day may discharge 300 to 600 tons of sulphur dioxide daily and a large amount of fly ash if the coal contains about 3 per cent sulphur. With the removal of fly ash by the operation of electrostatic precipitators or other dust collectors of 95 per cent efficiency, the plant may still release upward of 25 to 50 tons of ash per day. About 30 per cent of this ash may be deposited in the neighborhood of the plant. If the effective discharge height is 400 ft., most of this deposition will occur within about 1,600 to 4,000 ft. of the plant in a wind of 10 mph. Let us suppose that 75 per cent of the dust is deposited within a radius of one mile. The monthly dustfall rate over this area of about three sq. miles will then be approximately 54 to 108 tons/sq. mile. The sector in the prevailing wind direction will have a greater rate of deposition, and other sectors will be correspondingly lower, depending upon the frequency distribution of wind direction. Proper zoning of an operation of this magnitude would require that the industrial site be located on about 2,500 to 5,000 acres in order to minimize the hazard from both dust and sulphur dioxide damage on adjacent property. Under favorable conditions of topography and micro-

meteorology, the effective dispersion of such a large amount of waste sulphur dioxide would require stacks 400 to 600 ft. tall.

Modern control measures for smelters and steel, aluminum, and other large plants include not only the recovery of a substantial portion of the waste sulphur, fluorides, and dust from metallurgical operations, but also the ownership of sufficient land to prevent the occurrence of excessive ground concentrations or damage to valuable farm or forest property. Such land ownership provides a method of industrial zoning by private management. This pattern can be assisted greatly by municipal or county planning for industrial plant location. This involves zoning restrictions so planned that residential areas and certain heavy industries will not be located too close to each other. Although the location of new industries will result inevitably in the growth of new communities or the expansion of existing towns, such growth could be planned and zoned to prevent the encroachment of residences in the immediate vicinity of factories, especially in the prevailing downwind direction.

Certain chemical plants may discharge vapors and gases which react in low concentrations in the atmosphere to produce eye-irritating and other unpleasant effects by direct or photochemical reactions. Thus a synthetic rubber plant, producing or utilizing butadiene and styrene, located adjacent to a chlorine or hydrochloric acid plant, may create a pollution problem as a result of joint operations where none would exist if these plants were situated at a reasonable distance from each other. Halogen compounds and unsaturated cyclic hydrocarbons, such as styrene, can react in extremely low concentrations in the air in sunlight to produce lachrymators. Other irritating or phytotoxic substances may be produced photochemically by the interaction of atmospheric waste products consisting of hydrocarbons and oxides of nitrogen under the influence of sunlight. Such conditions provide an additional incentive for industrial zoning to prevent the haphazard location of industrial plants and to segregate certain types of industries.

In the zoning of land for industrial use it is apparent that due consideration must be given to all factors which govern the diffusion and dispersion of atmospheric contaminants, including topography of the area, frequency and speed of prevailing winds, and stability of the air.

#### *Planning for the future*

Many cities are now paying the price of past failure to plan for future orderly development. Smoke, dust odors, and poor zoning practices have destroyed fine residential sections and created blighted areas in the central parts of some cities. The resultant unattractive living and business conditions tend to



drive people away to the suburbs. The deterioration in property values soon makes it uneconomic to maintain buildings in good repair or to modernize them, and the whole neighborhood degenerates into a slum area. The newer built-up sections undergo the same process of decay in time as factories and other business enterprises creep into locations where they are not desirable.

There can be no successful solution to the problem of eliminating blighted areas in our large cities until air pollution is properly controlled. However, in many instances intelligent zoning and air pollution control measures must be carried out on a regional rather than a local basis. This requires co-operation between counties and states or provinces as well as between adjoining municipalities. Thus in the Philadelphia and Delaware River Valley industrial area, there is a tristate situation with regard to pollution control involving Pennsylvania, New Jersey, and Delaware. A similar situation exists with respect to large cities and factories bordering New York and New Jersey and along some points of the international boundary between Canada and the United States.

Extensive reconstruction and development programs have been undertaken by a number of large cities of North America within the last few years to remove blighted areas, plan for future orderly growth, and make living more attractive within city limits. This involves the expenditure of large amounts of money from both public and private sources for slum clearance, housing developments, transportation facilities, and air pollution control equipment. Successful results are being achieved by this process of planning and rebuilding, especially with the co-operation of community leaders representing industry, labor, and public-spirited bodies.

#### Discussant (Mr. HOGGE)

Dr. Katz's presentation of the topic has been most complete, both in his Background Paper and here this morning.

There is no doubt that the level of atmospheric pollution in all our urban centers in Canada is increasing concurrently with the increase in population and industrial manufacturing activities. The rate of increase is not as great as it would have been if some steps had not been taken particularly by some industries, to control the emission of air contaminants. It would be considerably less than fair to infer that all industries were oblivious to the need for air pollution control and were not taking steps to meet their responsibilities in this field. However, it should be recognized that our air pollution program is not sufficiently complete to effectively handle the complex pollution of the air in urban and industrial regions in Canada.

It is always nice to categorize the various considerations of a problem and I would like to do this here, merely for the sake of establishing starting points for discussion:

1. What are the adverse effects of air pollution?
  - (a) Deleterious effects on human health.
  - (b) Nuisance effects due to odors and eye and respiratory tract irritations.
  - (c) Decreased visibility limiting the ultra-violet rays of the sunshine reaching the ground and also interfering with various methods of transportation.
  - (d) Damaging effects to agricultural crops and other vegetation.
  - (e) Damage to property by soot, dust and corrosive gases.

2. How can the degree of air pollution be measured?

This could be assessed by making a survey of the residents in the area of concern and asking them what they think of it. This may be most helpful and enlightening where odors are concerned. However, this approach must be considered only semi-quantitative at best. We must depend on measurement of specific air contaminants to serve as a guide and then interpretation of the data obtained. Dust, smoke, sulphur dioxide, oxidants, hydrocarbons, oxides of nitrogen and fluorides may be classed as fundamental analysis of general urban air.

3. What degree of air pollution can be considered to be tolerable and not restrictive of the use of air as a process resource?

Standards of air quality in other countries have been developing in the last few years and will serve as a guide to acceptable practice. One must establish specific levels for specific contaminants and this certainly does not simplify the problem very much in an urban region. This aspect is, however, very important and one in which future work should be done.

4. How does one predict the increase in air pollution in a regional area or in the vicinity of a specific industry?

- (a) This consideration verges on the nebulous. Does one have to wait and see how things go or can this be predicted? In so far as specific industries are concerned, a prediction can be made with considerable confidence if one knows the pertinent design factors of plant emissions and design weather data, but experienced persons must do the evaluation. Here a *performance standard* or a set of performance standards would be a helpful guide for certain classes



of industries or types of contaminants, e.g., dust emission, density of smoke, type of incinerator construction. Possibly some of these data on performance standards are in use in parts of Canada now; if so, a summary or tabulation of these may be helpful to others.

- (b) In the case of general urban regions, the prediction of how big a region can be before air pollution reaches an adverse level, if specific control steps are taken, would seem impossible because of the variety of factors which could affect the result. Local topography and weather, amount of manufacturing and industry, the amount of automotive, truck and bus traffic are three widely varying parameters. These alone, I believe, would force the discarding of this hope, except possibly to have a recommendation that at certain levels automobile exhausts, single compartmented incinerators, etc., will commence to occasion adverse effects under particular weather conditions.
- 5. What is an effective assessment and/or control agency? Two points are important here, in my opinion:
  - (a) The area under the jurisdiction of the agency should include the sources of pollution affecting the area.
  - (b) The activities in the area should be of a sufficient scale to effectively use the complex and expensive air monitoring instruments and the skilled personnel required for adequate assessment.

In Alberta, assessment and control are at the provincial level. However, local health authorities are advised of activities and do assist in certain studies.

#### Discussant (Mr. LECLERC)

I wish to mention first that the Background Paper presented by Dr. Katz covers quite thoroughly the subject of air pollution as a Canadian problem. We recognize Dr. Katz as an authority in the matter and we know that he is aware of the situation of air pollution throughout Canada. This makes the task of a discussant very difficult and I have no remarks to make on the paper, except to say that it is very well presented.

I wish to concentrate a few minutes however on a few points covered in the assumptions and guidelines, stated as basis of discussions for this Workshop.

My first point is related to assumption number one, namely that air pollution should, from the point of view of health, sanitation, aesthetics and economics, be reduced to a *minimum*. How can we define this

*minimum* degree of pollution, and then how can we make sure that this minimum will be attained?

Atmosphere has an average absorbing capacity by virtue of turbulent mixing and predominant winds. This can be compared to the self-purification capacity of a stream, and in this field most engineers want to make use of this property in order to reduce the treatment necessary before discharging sewage to a river. Many biologists and conservationists, however, think differently, and I am inclined to think that engineers pay too much attention to the actual amount of money invested and not enough to a long-term preservation of our resources. It is my opinion that the term *minimum* should be taken in a strict sense so that one should consider public interest before private interest. We should play on the safe side for the benefit of the community, especially if we consider the unknown factors, namely:

1. We do not know yet all the means of prevention;
2. The actual means of prevention are not 100 per cent effective;
3. The effect of many pollutants on health is not fully known.

Therefore, I believe that every time a mechanical device or a corrective means of any sort is known, it should be installed without respect to the actual degree of air pollution in the region considered. Also that new measures be enforced as soon as they are proven efficient by research.

Only in this way will we prevent difficult situations like the one experienced in water pollution, where people have started to realize the problem only when an advanced stage of pollution has been reached.

The second point is to raise a question rather than to give an opinion. We know the importance of meteorology in problems of air pollution. Dr. Katz has mentioned in his paper the collaboration of the Meteorological Branch of the Department of Transport in relation to the study of the nature and frequency of temperature inversions in some regions. I have listened myself, in technical meetings, to papers presented by meteorologists doing research to correlate wind speed, degree of turbulence, height of stack, development of the boundary layer and so forth—and the theory and mathematics of these subjects are very complicated.

I want to ask if this information is at present made available in a useful form to community planners or do they simply design on a basis of normal prevailing winds? Do planners consult meteorologists for advice in their work? It is fundamentally important to the problem that the mechanism of diffusion be explained by using the most modern concept of fluid mechanics and by making use of wind tunnel experiments.

The final point refers to research and education. We

know about the facilities existing in Dr. Katz's division in Ottawa, and we know that the staff is very active by the numerous publications and contributions issued periodically. How much money is spent every year on research in air pollution throughout Canada? I do not know! This is not covered in Dr. Katz's paper. However, if we consider the total amount of annual losses ranging from about \$400 million to \$775 million, I feel free to say that the actual amount devoted to research is extremely small, and it is my feeling that federal and provincial health departments do not spend enough money on research in this field. Research should be initiated or intensified, not only in laboratories of the departments of health, but also in universities, with the assistance of federal and provincial funds.

Since air pollution control can best be achieved at a provincial level, I believe it seems logical that the province also contribute to a program of research, thus achieving two objectives: the solution of problems not yet solved and at the same time the training of technical personnel.

An important step in that line has been made at the University of Montreal by the formation of the Research Institute in Industrial Hygiene. This, I

understand, is a joint venture of the School of Hygiene and the Division of Industrial Hygiene of the Quebec Department of Health. I understand that a curriculum leading to an advanced degree in industrial hygiene and air pollution will be offered next year so that research conducted there, aside from being scientifically helpful, will serve in training competent people in the field. This example should be followed in other institutions throughout the country.

It is hoped to initiate next year at *Ecole Polytechnique* a postgraduate program in sanitary engineering. We will benefit by the collaboration and proximity of the School of Hygiene and the Research Institute, but only if we are involved in research in the field that we are teaching will we be able to interest students.

Let us realize that although many graduates come out of universities every year, too few are specializing in air or water pollution or in sanitary engineering. It should be a goal of this meeting to find means of interesting more young engineers and scientists in a career in sanitation, public health or sanitary engineering.

## DISCUSSION

A number of areas of agreement evolved, including: the need for more research; the need for more training of specialists in the field of air pollution and persons in related fields; and the need for a central point from which information may be distributed on a continuing basis to all air pollution agencies, relevant disciplines, and others having an interest in or responsibility for causing or controlling air pollution.

While many air contaminants can be identified, measured and controlled, many cannot with our present store of knowledge. It is known that air pollution bears a relationship to the deterioration of health, buildings and other exposed materials, and plant life. Much more needs to be learned with respect to both the cause and effect of air pollution, the interaction of substances and ways and means of instituting reasonable controls.

The lack of trained personnel was evident on all sides. Areas wishing to administer proper controls or study their problems are often confronted with an extreme shortage of qualified people. Emphasis was

given to the lack of training and educational facilities for both those who wish to specialize in the field and those who may be in a related field but require some knowledge of the subject.

There appears to be a lack of central clearing facilities for the collection and dissemination of information with respect to air pollution. While many avenues have yet to be explored, there does exist a substantial body of knowledge and literature which could be brought together and distributed to all directly or indirectly concerned.

No generally acceptable method of approach in determining the cause, identification and control or prevention of air pollution emerged from the discussion although it was evident that it is essential and possible to develop and establish such methods. No clear division of the area of responsibility emerged as between government and private interests and the institutional disciplines concerned—engineering, town planning, public health, climatology meteorology, etc.

## URBAN GROWTH AND RESOURCES WORKSHOP B

## REVIEW AND CONCLUSIONS

Friday, October 27

On Friday the Workshop reconvened and reviewed the conclusions and recommendations arrived at on Tuesday. The following is a revised statement of the conclusions and recommendations, and two statements submitted by individual participants.

*Revised conclusions and recommendations*

1. Air is a primary natural resource as important as water.

2. Control of air pollution is essential to the optimum use, maintenance and development of agriculture, forestry, wildlife, land use and urban growth, in addition to its basic importance to the physical health and social well-being of the people of Canada.

3. A section or division concerned with air pollution should be included in the activities of the anticipated National Resources Council.

4. Air pollution should be assessed by competent authorities and subsequently reduced to levels acceptable to those authorities in respect to health, sanitation, aesthetics and economics.

5. Research studies should be co-ordinated and facilities expanded as necessary for the purpose of:

- (a) Establishing standards for ambient air quality and emissions;
- (b) Developing new ways or improving existing ways to measure and identify air contaminants;
- (c) Advising as to the air pollution potential of various sources of contaminants and the necessary control facilities;
- (d) Developing effective remedies.

6. Facilities should be established to train staff in air pollution measurement and evaluation techniques, control measures and administration.

7. From the point of view of the long-term national interest, the establishment of effective legislative and administrative means by the various governments for controlling air pollution is desirable.

8. Air pollution has important regional aspects, and for this reason research measurements and control of air pollution will have to take into account its regional characteristics and regional differences as well as its more general aspects and norms.

9. There is a vital need to communicate information about air as a resource, and air pollution, to the public and all concerned, by the means outlined in the reports from the Information-Education Workshops.

*Statements by individual participants*

The following two statements were submitted as additional information and were discussed, but are not necessarily the views of the Workshop as a whole:

*Statement A.* During the discussions which have taken place in the past three days, we have been appalled by the failure to recognize that air and water are the two primary renewable resources and that the lack of action relative to air stems solely from ignorance of the ways in which man is defiling this vital resource. The primary requirements at this time are:

1. Education of the general public to create a public opinion and make action politically attractive.

2. Education of members of other disciplines, such as engineers, lawyers, planners, members of the medical profession, to seek professional help in the prevention and control of pollution problems.

3. Training of technicians and professional personnel for research, and enforcement to control existing situations.

*Statement B.* It is known by persons experienced in the study and evaluation of air pollution, that air in a city can be polluted to the extent that it interferes with the optimum use of that city for a number of urban purposes. It has been demonstrated, on numerous occasions, that air contaminants generated in a city or other area, will travel some tens of miles and affect the area seriously enough that use is far below optimum.

The possible adverse effects of air pollution have been cited in many newspapers, popular magazines, technical journals, and well-accepted text books. These adverse effects, however, often do not sound important to residents, manufacturing or industrial management, forestry interests, or agricultural people, until the quality of the air has degenerated to the point that these effects are obvious to everyone. The implementation of an air pollution control program is not an elementary governmental act for a number of reasons, some of which are as follows:

1. Air pollution is not a uniform continuous condition. It varies directly with the ability of the atmosphere to dilute and disperse the air contaminants, and may be completely absent for long periods of time.

2. The apparent effects of air pollution often progress gradually, and there is a strong tendency



to accept these as inevitable until they reach a very high level.

3. The sources of air contaminants in a city are numerous, varied and often very complex, making their location, evaluation, and control a far from simple procedure.

4. The air contaminants may originate in a number of neighboring political entities and may affect one or all of these, as well as distant areas. Thus, evaluation of the effect and of the source may well be in two very separate areas of interest and jurisdiction.

5. While that portion of the air pollution which is due to the general activities of the city increase quite directly as the city's population expands, that which is due to commercial and industrial activities is quite varied depending almost entirely on the capacity and nature of the particular plant's operations.

It is, therefore, felt to be desirable, in fact essential, that this Workshop recommend to the "Resources for Tomorrow" Conference that air pollution control is essential to the optimum development, maintenance and use of the renewable resources of Canada. The procedures and methods of effecting control should, we believe, be implemented in a fashion suited to the needs and wishes of the governmental entity responsible. In some areas the federal government is specifically delegated these powers by constitution, but in the large percentage of the areas concerned, the provincial governments have the authority and responsibility to effect control, or to delegate this authority to other governmental entities within the province.

In order that this Workshop may be of maximum assistance and benefit to the Conference, we have taken the liberty of listing those specific actions which we feel would be effective in controlling air pollution.

1. In urban centers with a population of over

200,000 people, or any area with a large industrial factor, an assessment of existing air quality should be undertaken and specific air contaminants determined.

2. All new industries and manufacturing plants, except those known to be inoffensive with respect to air pollution, should be reviewed, and their rate of emission and method of dispersing air contaminants evaluated.

3. Particular attention should be paid to the nuisance aspects of air pollution, namely offensive odors and noise.

4. Care should be taken to accommodate to the various use considerations as far as possible by

(a) Spacing heavy industry apart from residential areas and/or arranging separation by barriers such as tree belts, other industries, manufacturers, warehouses, etc.;

(b) Locating industries with a difficult air contaminant problem in the most favorable location possible to assist in the dispersion of their waste gases.

5. The atmosphere dilution-dispersion capacity of the city and industrial areas referred to in item number (1) above should be evaluated by detailed micro-meteorological assessment technique.

6. Research by both industry and government should be encouraged to further the understanding of the adverse effects of air pollution, the methods of control as well as measurement and evaluation.

7. Maximum use should be made of the existing knowledge of the subject in Canada and elsewhere. To further this objective, as well as to disseminate the achievements of research, a national co-ordinating group should be established.

8. A program should be evolved at both the university and technical level to facilitate the training of staff for air pollution assessment, evaluation and control.

*Workshops*

*Wednesday, October 25, 1961*





# MANAGEMENT

Wednesday, October 25, 1961

"No longer can we consider water resource projects in isolation. Instead we must recognize the intimate relationship of water uses and reconcile the competing claims on the basis of the best over-all advantage. We must also take account of the interrelationship of water management with the management of other resources. In a word, over-all planning and development must be our goal. But . . . we must have a framework of administrative agencies which are sufficiently co-ordinated and adequately equipped to handle the complex tasks which this approach involves."

*T. M. Patterson, "Administrative Framework for Water Management," Resources for Tomorrow, Vol. 2, p. 227.*

## *Introduction*

The management of renewable resources was discussed in two Workshops. Workshop A dealt with ways to direct management toward more effective multiple use of resources while Workshop B studied ways of effecting better co-ordination of public and private decisions.

More efficient communication between the various levels of government, industry and public, as well as between disciplines, was one of the ways cited by Workshop A as a means of meeting the objectives of resource management.

Mr. Sharp, the lead-off speaker of Workshop B, said that private owners of renewable resources welcomed government assistance in solving their problems. "Public authorities should make their policies as clear and comprehensive as possible and bring their regulations into line with their policies," he suggested.

The Workshop agreed that while public policies should be clear-cut they also should be flexible enough to be adapted to changing circumstances.

In dealing with the forest resource, government policy should be clear and stable to allow private enterprise to carry out long-range planning. Government must also share the responsibility for fire protection, access roads and harvesting standards and assist in research and development programs that are beyond the means of small operators.

The group agreed that only government can develop wildlife and sports fishing effectively and has responsibilities also to improve the efficiency of agriculture and fisheries. Active government participation was required for the best utilization of water resources and could provide leadership and technical assistance to urban planning and development.

# Management Workshop A

WEDNESDAY, October 25

Directing management to more effective  
multiple use of renewable resources  
on a continuing basis.

- Chairman: DOUGLAS OMAND, Supervisor, Wildlife and Enforcement, Ontario Department of Lands and Forests.
- Co-Chairman: ROLAND DESCHAMPS, Assistant Deputy Minister, Quebec Department of Lands and Forests.
- Lead-Off Speaker: V. A. WOOD, Director of Lands, Alberta Department of Lands and Forests.
- Discussants: R. G. HENDERSON, Chairman, Flood and Pollution Advisory Board, Metropolitan Toronto and Region Conservation Authority.  
E. A. POYSER, Soils Specialist, Manitoba Department of Agriculture.
- Rapporteurs: A. G. LOUGHREY, Head, Game Management Service, Canada Department of Northern Affairs and National Resources.  
P. B. BOURGET, President, Forest Industry Association, Quebec.

## Chairman (Mr. OMAND)

### (Summary)

Management may be defined as the manipulation of the resource base for production of the resource with regulation of use to permit a sustained yield. Management is formed of two opposing factors—the positive factor of production and the negative factor of regulation of use.

While the yield of a resource may be in concrete, measure production, e.g. cords of wood, tons of fish and agricultural produce, there is also the aesthetic yield of a resource, that is, its ability to satisfy inherent human needs for recreation and refreshment. Fishing, hunting and recreational use of land provide yields of this type. The conditions under which the human population lives, as far as these are dictated by land use policies, may be considered a yield of the management of land. These yields are difficult to measure, but it is not necessary for us to measure them here. Our concern is that they be recognized as legitimate yields or products of a resource.

Management will generally be carried out by means of the money spending powers and the regulatory powers given to various levels of government.

This implies that public support for resource management programs is essential, and also brings up the question of the jurisdictions of various governments.

The purpose for which we wish to produce sustained yields of resource products is important. Presumably it would be correct to say that we wish to benefit people by providing the products of resource management to them, to provide employment and a better living standard through the exploitation of natural resources. This implies that these benefits must be made available in sufficient quantity and at locations where they may be utilized by our population. Pleva (1960) points out that the population of Canada at that time was 17.7 million people. This would be expected to double by 1993. Further, he suggests that at present, 62 per cent of the population of Canada lives now within 25 miles of a line drawn from Quebec City to Windsor, in an area amounting to less than one per cent of the total area of the Dominion. This narrow corridor contains 62 per cent of our population, 84 per cent of our industrial activity and 42 per cent of our agricultural production.

Further, he suggests that increases in population will take place as a result of increasing the density of



population in the present heavily populated areas, rather than as a result of major expansion into what are at present low-density areas.

These points are important when we consider the sustained yield of raw materials for resource-based industries, and the provision of benefits to individuals, such as recreation opportunity. These will be of greatest benefit to our people and our economy if they can be provided in the localities in which they are needed.

Other considerations are involved. Any proposal which concerns the management of land must take into account the basic rights of individuals and property owners. We are all faced with the fact that our most productive lands are in private ownership now, and Crown lands, on which presumably management practices can be imposed, are those areas which, by reason of low productivity or poor accessibility are less likely to yield the greatest possible economic benefit from management.

#### **Lead-Off Speaker (Mr. Wood)**

It is assumed that management as referred to in this panel encompasses all of the factors relating to the use, development and regulation of the renewable resources.

For convenience it is proposed to discuss the following factors in their relationship to management:

- Aims, goals and objectives;
- Inventory, basic data;
- Research;
- Analysis, planning and policy making;
- Administration, execution or action to carry out policy.

Management of the renewable resources could be discussed at the federal, provincial, municipal, corporate or individual level. It has been suggested that the panel confine the discussion to the federal and provincial level and to an extent the municipal level.

The role of the federal and provincial governments in the management of renewable resources could be discussed at great length. However, as there are other panels dealing with this problem it is proposed here to assume that the provinces have control of the management of the renewable resources within their boundaries and that the federal government has control over trade and commerce and to a degree sets the limits or boundaries within which the resources are to be administered. The federal government often has similar objectives to the provinces in the resource development and may give assistance in various ways, some of which will be referred to later in the discussion. Most of the papers agree with these relative roles of the federal and provincial governments.

Carr states, "But the management and sale of natural resources were made a provincial responsibility (Section 92, Sub-section 5 of the BNA Act) as were property and civil rights (s. 92 ss. 13). In past decisions, these two subsections have been interpreted by the courts to mean that control of resource use must be effected in the main by or through provincial governments. These resource responsibilities of the provinces were intended to be qualified by giving the federal government authority over regulation of trade and commerce."

#### *Aims, goals and objectives*

The topic to be discussed in this Workshop would appear to relate directly to one of the main objectives of the "Resources for Tomorrow" Conference. On the front of Information Bulletin 2 it states in part that "the Conference will explore possibilities for better management and development of our renewable resources. The multiple use of resources to support an adequate rate of growth in the Canadian economy will be the main focus of discussions."

The objectives of management in the administration of our renewable resources have changed considerably since these resources began to be developed. Also it is being realized that the management of each resource must be correlated with the management of the other resources, in other words, there must be a multiple use of our resources if they are to be used efficiently.

A few quotations from the papers illustrate this statement, with reference to past objectives.

Carr states: "Up to about the time of the depression of the 1930's, when agriculture's difficulties became great enough to stimulate reconsideration of former land policies, primary emphasis was given to the sale rather than the management of public lands. Provincial legislatures were concerned primarily with colonization settlement and the sale of public lands for revenue and to widen the tax base . . . Land management in these circumstances was concerned chiefly with promoting, surveying and recording the transfers of public land and with protective measures related to weed and fire control, livestock pounds, fencing and such."

A review of the papers indicates that in the past this general attitude of management was similar for all of the renewable resources. We must realize that in many cases they did not have the basic data or research on which to base their policies.

Shefrin and Menzies give a universal goal or objective that applies to all resources including human: "The goal of a higher level of living through a more efficient use of human and natural resources is universally applicable."

Bentley outlines several goals in the management of our soils: "To maintain productivity of the land

for future generations . . . to meet the nation's requirements for food and industrial material by the most effective use of land" and "to contribute toward a better life for Canadians."

Carr states that "land resources, which include available water, have many uses—agriculture, forestry, wildlife, recreation, irrigation, water supply, hydroelectric power, navigation and others. If society is to obtain what it considers the maximum value from its resources, emphasis must be given to the co-ordinated yield from this multiple use of land rather than to the yield in single uses."

Fox and Craine state, "there are two classes of objectives associated with water development in the United States. On the one hand, water development may be viewed as an instrument for realizing relatively broad national, social and economic goals. On the other hand, there is the immediate and direct interest in securing the services that water can provide—domestic supply, hydroelectric power, transportation, recreation, waste disposal, etc."

Tunstall states: "The forest is much more than an accumulation of raw material for forest industries. It is a dynamic complex which provides shelter for fish, game and fur-bearing animals; regulates stream flow; covers underground wealth; sometimes provides fodder for cattle and always provides relaxation and pleasure for untold numbers of Canadian and foreign recreationists." He adds: "the need for planned integration of all the demands made upon the forest is becoming increasingly imperative."

Tunstall states further that "multiple use of forest land is simply the utilization of the forest resources for two or more purposes such as production of wood, recreation, grazing, wildlife, and the control of runoff." Later on he says "remembering that forestry is only one of several land uses and that each has its place in our social and economic development, with careful planning, many of the mistakes which have been made in the past can be avoided and increased benefits obtained. . . . The tendency in the past has been for each agency such as agriculture, forestry, wildlife and recreation, to develop its own plan. What is needed today is a co-ordinated plan in which all uses are considered. As the provinces have control of their natural resources, each must plan its own development. However, each can gain much from the experience of the others and it would be advantageous to set up a national committee which would meet annually, or periodically, to exchange information. A national committee seems more desirable than an interprovincial one because of the federal responsibility for extensive areas in the northwest. Also the federal government should continue to co-operate with the provinces in land use development."

Pepler makes a statement in regard to the eval-

uation of management that applies to most renewable resources: "The first stage of development in Canada (and for that matter, in any country with abundant forests and sparse population) is that of exploitation, with the government in the name of the people drawing its share of the profits in direct revenue. Policies at this stage are protective; they aim to set up guards against damage or loss of a source of revenue."

"The second stage comes when consciousness of the renewable features of the forest awakens. Policies are supervisory and provide for inspectors to see that certain measures are taken to ensure renewal of the resource. In forestry circles this might be called the extensive management stage. Policies are established for protection, sustained yield and improved utilization. Associated with these policies is the thought that their implementation will mean satisfaction of the demand at present and for some time in the future."

"The third stage comes when pressures develop which force more productive use of the resource to provide for the survival of the dependent industries. Policies must be developmental. The agencies for carrying them out might be termed co-operators. Policies are adopted for additional activities—silviculture, research and promotion. This is the intensive management stage."

Mair summarizes: "The objective of wildlife management might be stated, in broadest terms, thus: to ensure that wildlife contributes in the fullest sense to development of the earth's life complex, to be used and enjoyed by mankind now and forever."

Crutchfield states that the place of fisheries in multi-purpose water development programs must be decided and he goes on to say that "it is proper to ask the regulatory authority to include as a prime objective the maximization of economic benefits from the resource, as would be expected of any other sensible landlord."

The Soil Conservation Society of America (quoted by Mair) has adequately summarized the objectives or goals of resource management: "The objectives of this Society shall be the development and advancement of the science and art of good land use and management and the promotion of conservation of soil, water and related renewable natural resources including, without limitations, trees, grass, fish, wildlife, and all other forms of beneficial plant and animal life and for these purposes to employ education of the people and other appropriate means to the end that mankind may have the use and enjoyment of these resources forever."

While there is fairly general agreement on the objectives or goals in the management of the renewable resources and there is general agreement that they must be managed on a multiple use basis,



there is no clear-cut agreement on how these objectives or goals can be reached.

#### *Inventory, basic data and research*

A few quotations will illustrate the opinions and attitudes of the authors of the papers in regard to the importance of these factors in our discussion.

Bentley states: "Extensive research will be required to solve some of the soil management and fertility problems now facing Western Canada." Also: "Research can determine the soil management and fertility needs of our as yet undeveloped agricultural lands and enable the development of these resources tomorrow without costly mistakes such as have been made in the past."

Clarke, Watt and Bruce point out that "sound planning, design and operation of projects for the use of water resources depend on the collection and interpretation of basic data. The need for such data has long been recognized . . . yet in almost every report relating to water uses there is a call for more basic data."

Baker states: "The lack of adequate research in the pattern and problems of recreation land use constitutes one of the most serious bottlenecks to the orderly expansion of public recreation facilities and the efficient development of our renewable resources. Basic research is required in the relationship of natural environmental factors such as location, climate, topography, etc., to various forms of recreation. Present recreation land use inventories encompassing both public and private forms of recreation development are a necessity. Finally, a recreation land use capability inventory must be undertaken. These three distinct but closely related lines of investigation will provide the data required for effective recreation planning and development."

There is general agreement that basic data, inventory and research are required before proper planning can be done or before any resource can be managed properly. Several authors expressed the opinion that the federal government should assist in the collection of basic data and in conducting inventories although there does not seem to be clear-cut agreement on this point. It was generally agreed that research costs should be handled partially or completely by the federal government.

#### *Analysis, planning, policy-making and administration*

It would appear that one of the biggest problems in directing management to a more efficient use of renewable resources on a continuing basis is the problem of analysis, planning and policy-making. In other words assuming there is agreement in objectives, assuming there are adequate inventories and basic data and assuming there are adequate research

facilities available, it is still necessary to correlate all of the data and determine what policy will be followed to obtain the objectives. Once this has been done the administrative branches can be requested to put the plan or policy into operation.

R. R. Renne, in his book on land economics, gives six basic requirements for successful planning in the United States. These apply in general to planning in any country. These requirements are:

1. It must be economically sound. (This factor should always be kept in mind.)
2. It must be administratively workable.
3. It must be politically acceptable to public opinion.
4. It must be constitutional in the eyes of the supreme court.
5. It must be compatible with tradition and take account of geographic, cultural and economic differences between regions.
6. It must be capable of evoking co-operation on the part of labor, agriculture, business and government interest.

Many of the authors do not try directly to solve this problem of analysis, planning and policy-making. Some refer to the difficulties in solving the problem and others bring forth specific suggestions. There is no clear-cut distinction between policy-making and the administrative function and in some quotations both functions are mentioned.

Some authors claim that the federal government should set the over-all broad policy for the resource development and work with the provinces in developing the provincial policies.

The following are a few quotations in regard to the subject of analysis, planning, policy-making and administration:

Spence and Scott state: "If our society is to achieve maximum satisfaction or value from its agricultural land, more needs to be done in the planning of the use of this land. Such planning must be a dynamic process involving both remedial and preventive action. Thus, Canada has to correct mistakes arising from faulty settlement policies. On the other hand, there is considerable evidence that land use is coming into its own in the positive sense of administering land use policies in such a way as to minimize mistakes."

D. W. Carr states as follows: "When resource objectives have been adequately examined, defined and established, the task of building the necessary legislative-administrative structure can be carried forward with confidence. Of particular importance is the fitting together of the various responsibilities, functions and groups into a co-ordinated, workable organization. What this means in effect is differentiating among decisions, classifying some as requir-



ing unified national action, others as needing a large measure of local adaptation and this is best done chiefly at the local level, leaving to the provinces those in which unity of action, province by province, is sufficient and acceptable."

Kristjansson and Sewell favor a unit or area approach for management of resources. They state: "There is growing interest in comprehensive multipurpose development of the water resources of Canada. It is generally recognized that a river basin should be used as the basic unit for such planned development."

Patterson states: "As these changing patterns of water demand have evolved and new concepts of water use have emerged, it has become evident that our approach to resource management must become more comprehensive than in the past. No longer can we consider water resource projects in isolation. Instead we must recognize the intimate interrelationship of water uses and reconcile the competing claims on the basis of the best over-all advantage. We must also take account of the interrelationship of water management with the management of other resources. In a word, over-all planning and development must be our goal. But to achieve this goal we must have the necessary means to bring it about. In particular, we must have a framework of administrative agencies which are sufficiently co-ordinated and adequately equipped to handle the complex tasks which this approach involves."

Baker states: "The relationship between resource uses can be categorized as competitive and complementary. In the case where uses are competitive one may preclude the others. In the case where a complementary relationship exists one form of land use is tolerant to another or they may even be mutually reinforcing. In the British Isles the entire national park system has been built on the concept of complementarity embodied in multiple land use."

It is evident that if the renewable resources are to be managed efficiently on a multiple use basis decisions have to be made of the relative importance of the different uses. This is bound to bring in conflicts which cannot always be solved strictly on the basis of economics.

As Fuller points out: "If wildlife conservation is to serve the majority, we must modify the widespread belief that economics alone should determine all land use." This thinking applies in determining the use of land for recreation.

To have efficient management on a multiple use basis it would appear that the approach used in the Eastern Rockies forest conservation area of Alberta and the river basin organization of Ontario, under the Conservation Authorities Act, would be helpful for some types of problems.

Tunstall states: "One outstanding example of a multiple use forest area is that administered by the Eastern Rockies Forest Conservation Board under the terms of an agreement between Canada and the province of Alberta. This area of 9,000 square miles lies to the east of Banff National Park. It is partly in the foothills and partly in the mountains. Together with Banff National Park, it embraces most of the headwaters of the Saskatchewan River. These headwater areas, above the 4,000 foot level, are somewhat less than 20 per cent of the drainage basin, but account for over 80 per cent of the stream flow. The policy for this conservation area is to utilize all the forest resources, making such adjustments to usual management practices as are deemed necessary to ensure optimum yields of water. Its work in reconciling different uses of the watershed area under its jurisdiction would be instructive. Accordingly it is pertinent to make reference to this experience in relation to the various uses of forest land which are considered below."

He then goes on to explain the different uses made of the area such as forestry, grazing, recreation, trapping and hunting and fishing. All of these uses are related to the dominant use of optimum yields of water.

Richardson and McMullen describe the operation of the Conservation Authorities Act in detail. The Act requires that all municipalities in a watershed, including cities, towns and villages and townships, be included in a body corporate. A Conservation Authority is established by local representation and a presiding officer and secretary is chosen. To quote these authors:

"While most of the early Authorities were brought into being because of flooding, all were aware of the necessity of carrying out such supplementary measures as improved methods of land use, reforestation, proper woodlot management, prevention of pollution, investigation of underground water supplies, fish and wildlife studies and recreation. But the Authorities were not equipped to carry out the extensive investigations that would indicate where such work should be done. Consequently the Conservation Branch of the Department of Commerce and Development undertook to do this at no expense to the Authority, to appraise by means of surveys and reports the conservation needs of each watershed and to submit to the Authority a detailed report outlining the conservation measures that should be followed. These reports are in the form of a working plan and are intended primarily for the Authority members. When the report is presented, the Authority must assume responsibility for initiating the schemes which it considers most urgent; it must also make approaches to the government departments or other

bodies from which it hopes to get assistance, either financial or otherwise."

In commenting on the watershed approach, Carr states:

"This watershed approach in Ontario stands out as an illustration of the benefits of using the most effective unit for co-ordination of action programs. Its progress and acceptance provide evidence of this value. But it has progressed far enough now to demonstrate the growing importance of the next, the complementary step, that is, using the watershed as one of the basic units for appraising and mapping the land use potential for a region and using this as a guide for the action programs applied."

In summary we conclude that there is general agreement on the objectives or goals for the management of the renewable resources. It is agreed by all that effective management must be on a multiple use basis. It is generally agreed that effective management requires adequate inventory and research.

Most authors agree that analysis, planning and policy-making must be done by those representing the various resources or at least with adequate knowledge and thought being given to the development and use of each resource on a multiple use basis with the over-all objectives in mind. There does not appear to be any one approach that will solve all of the problems of planning and policy-making, but the area approach does seem to have merit in some cases.

Not too much has been said about actual administration or methods of implementing policies. This, of course, is a very important function. This may be done in several ways, such as coercion or legislation, by persuasion and education, by the use of subsidies, by use of the tax system or price system, etc.

It is assumed that it was not the intention for this panel to discuss all of these factors. However it is felt that there must be a very close relation between the analysis and policy-making bodies and the administrative bodies if good management is to be achieved. In some cases the policy-making and administrative body is the same, or at least within the same organization or department of government. It is considered there is merit to this type of organization as it gives more co-ordination between analysis, planning and administration.

#### **Discussant (Mr. POYSEY)**

I am going to make four points. Some of these points have already been covered very briefly by the Chairman and lead-off speaker, but all are in my opinion significant.

#### **1. The Objectives of management are dependent on the locational nature of resources**

Our total resource base is quite large, but closer

inspection of resource inventory in the Background Papers reveals that major portions of our resources occur in areas remote to population, e.g. the Mackenzie, the Nelson River.

Mr. Omand has pointed out that 62 per cent of the Canadian population live in a regional area which constitutes 1 per cent of the land area of Canada. It follows that pressure on and conflict in resource use can be expected in areas of such high concentration of population. In regions where population is sparse, pressure on resource use is relatively small.

Fox and Craine point out the changing values placed on resource use as population increases. Speaking of water, they say that where population is sparse, economic development is usually the main motivation in water resource development. On the other hand where population is concentrated, cultural and aesthetic values such as the need for recreation, and the preservation of streams and stream valleys become increasingly important.

Thus it seems to me that this group should examine methods of directing management to the most effective multiple use of resources in two kinds of areas:

1. Areas of concentrated population;
2. Areas where economic development is the goal.

It should be helpful to refer to our variety of experiences with:

- (a) Land utilization boards
- (b) Metropolitan planning boards
- (c) Watershed planning authorities, etc.

#### **2. Objective of management should be to maximize complementarity of multiple use**

A very significant point made by Mr. Wood was the need to maximize complementarity of multiple resource projects. This area means determining what is competitive in resource development (e.g. wild ducks and barley fields) and what is complementary (e.g. dam for flood control and for irrigation.)

Baker says: "It should be noted that the exploitation of the advantages of complementarity necessitates adequate planning—a complementary relationship may be obtained through appropriate land use controls."

All this means that when and if planning authorities are set up they should be so formed as to allow for maximization of benefits for multiple purpose projects.

#### **3. One of our biggest problems in resource adjustment and management has been the inability to bring about land use adjustment on marginal lands**

Carr says: "Most distressing problems are those concerned with lands on which economic forces do



not operate strongly enough to shift them into more productive use."

For example, speaking from experience, we in Manitoba find it difficult to deal with large blocks of poor farm land. In establishing a community pasture we tend to encroach on unused lands rather than try to form a pasture in areas which contain these scattered submarginal farms. Of course, we get into conflict with forestry, wildlife, recreation and others.

This example does not cover all aspects of this point, but illustrates the problem to be faced. There is no easy solution here. Gilson, dealing specifically with the small farm problem, makes the following points as programs essential to reorganization of submarginal farms.

1. Programs to assist out-migration of surplus human resources through educational and vocational training—better alternative employment information.
2. Extended supervised farm credit and management.
3. Long-term planning and use of rural zoning to achieve objectives.
4. Offers to purchase land (on a continuing basis) in chronically low-income areas by provincial governments.
4. *Better decisions in resource adjustment for multiple use could be achieved through interdisciplinary analysis groups*

Implications of the last quotation lead into this question: Can resource adjustment be handled by one department? Broadly, can the Department of Agriculture, as such, turn farmers into steelworkers through vocational training etc., and then in turn change land use to recreational use. Without expanding on this I would suggest there are many social factors that are very difficult to deal with. On this point Carr says: "Federal land use activities, soil surveys, land classification, economic studies, etc., suffer from a similar weakness—centered largely in the Department of Agriculture, they lack the co-ordination and focus that clearly defined resource adjustment and development policy could provide."

Are we to conclude from all this that resource analyses should be done by formal interdisciplinary groups—people from land, water, forests, fisheries, recreation, and wildlife who meet to determine the best alternatives for problem regions? Should these alternatives then be handed directly to the executive body for consideration?

This would result in separating the responsibility for multiple purpose analysis from normal departmental administrative responsibilities.

There seems to be a diversity of opinion on this

point in the Background Papers. People in administration would like planning tied fairly closely to their role. People in management, especially multiple use management, feel frustrated by the limitations of departmentalization of land use planning.

#### Discussant (Mr. HENDERSON)

As a layman my remarks will be confined to that phase of resource management with which I am most familiar, namely the program of the Metropolitan Toronto and Region Conservation Authority.

The Metropolitan Toronto and Region Conservation Authority is a corporate body having jurisdiction over an area of approximately 1000 square miles in and around the Municipality of Metropolitan Toronto. This Authority is the result of an amalgamation of several smaller Authorities based in individual watersheds or drainage basins. The amalgamation has resulted in a truly regional approach to the multiple use of resources.

The watershed as a management unit has a great advantage in that it cuts costs across the single resource bases and provides an opportunity for integrating, under one administrative unit, the management of a number of resources including water, soils, forests, etc.

The Conservation Authority functions under the provisions of the province of Ontario statute—the Conservation Authorities Act. An important factor, however, is that the program is initiated at the local level. As an example, in order to establish an Authority, at least two municipalities within the drainage areas of the proposed Authority must petition the province to call a meeting to consider the formation of an Authority. At such a meeting all municipalities lying within the boundary of the proposed Authority are entitled to representation, and at least two-thirds of the eligible representatives must be present before the question of the formation of an Authority can be put to a vote. Thus the Authority is formed through local initiative. The same pattern is followed after an Authority has been formed for carrying out projects. The Authority determines (based on local need) what projects it wishes to undertake and then requests the financial assistance of the provincial government.

Thus, the enabling legislation and policies of financial assistance make it possible for the Authority to function, though the program itself is not imposed from above, but is initiated at the local level.

The Metropolitan Toronto and Region Conservation Authority is only one of approximately 30 in the province of Ontario. However this program is representative of the types of projects being undertaken by all the Authorities.

*Forestry.* The Authority has a two-fold forestry program. Marginal and submarginal lands are ac-



quired by the Authority and are placed under agreement with the Ontario Department of Lands and Forests for management. To date, the Authority has acquired some 1500 acres of this type of land. Recognizing that many private owners also wish to carry out forestry programs, the Authority has adopted a policy of assisting private owners wishing to reforest marginal and submarginal lands. The total planting program of the Authority involves over one-half million trees annually.

*Land use.* The Authority has a varied program for promoting improved land use practices directed to the agricultural resource of the region. Included in this program is the assistance and the establishment of farm ponds and grassed waterways, tile drainage to improve the productivity of wetlands and general recommendations regarding fertility, crop rotations etc. In this program the Authority relies heavily on the technical assistance of the Department of Agriculture.

*Fish and wildlife.* On all lands owned by the Authority attention is given to the improvement of the habitat for wildlife, and considerable research is being done in the management of ponds for fish. The Authority also maintains its own hatchery to carry out a program of stocking suitable waters for public fishing.

*Recreation.* The Authority has a program of acquiring and developing suitable areas known as Conservation Areas for multiple use conservation management with emphasis on outdoor recreation. Such facilities are included in these areas as picnicking, swimming, fishing, hiking and nature study.

*Flood control.* One of the most important aspects of the Authority's program is that of flood control. Since the Authority's establishment in 1959 a number of projects have been undertaken including the acquisition of approximately 2000 acres of flood plain land and the carrying out of several channel improvement projects to relieve local flood conditions. It was soon realized that an over-all comprehensive plan for flood control was required, and as such a plan was prepared. This plan has now received the approval of the provincial and federal

governments, both of which will participate financially. The Authority is now embarking on the first phase of a 10-year plan which will see the acquisition of additional flood plain and valley lands and the construction of 15 flood control dams and reservoirs. In addition to the flood control benefit to be derived, most of the lands acquired will be developed for recreational use following the pattern described for our Conservation Areas.

*Conservation education.* Because the Authority has such a diversified program and because the local residents must be kept aware of its many aspects, the Authority has adopted a broad program of information and education. This program includes the preparation of regular press releases to keep the public informed. Education for the younger generation is accomplished through guided tours, classroom lectures and encouragement of Conservation Camp School Programs. The Authority has produced a number of brochures and folders describing its program and is now preparing a series of motion pictures.

From the above can be seen that the three levels of government are involved in a co-operative program of management on a multiple use basis. Various agencies of the senior governments have provided considerable assistance in co-ordinating the program. Of particular assistance to the Authority has been the Conservation Branch of the Ontario Department of Commerce and Development which administers the Conservation Authority Act and provides considerable technical information and assistance.

It is my opinion that the watershed unit is perhaps the most suitable unit for multiple use resource management. The principle as it is applied in Ontario has the advantage of local initiation of program based on local needs and the co-ordination of management of the various renewable resources. While recognizing that conditions vary considerably across this vast nation with certain management problems more important than others in different regions and an infinite variation to the size of watershed units, I would foresee a far greater application of the watershed principle for resource management.

## DISCUSSION

The Chairman presented a list of basic assumptions to the group. These assumptions, as amended by the group, were:

1. That renewable resources are water, soil, forest, fish and wildlife;
2. That management encompasses all the factors

for optimum use, development and regulation of renewable resources;

3. That the discussion of management is limited to governmental, corporate and individual levels; and
4. That for the purpose of the discussion the

provinces have control of the management of renewable resources within their boundaries, and the federal government has control over trade and commerce and to a degree sets the limits or boundaries within which the resources are to be administered.

Multiple resource use was defined by the group as "the use of a resource for two or more purposes."

It was decided by the group that the following major conflicts impede the solution of multiple resource use:

1. A lack of goals for multiple use on a regional, provincial and national scale;
2. A lack of, or misuse of, basic inventory, data and research;
3. A lack of communication between different disciplinary and governmental levels; and
4. The institutional framework for giving effect to policy and planning.

In collecting data on renewable resources it is essential to have a clear knowledge of the aims or objectives to be attained. A decision must be made as to the agency or agencies which will gather these data—federal, provincial, local, etc. Each of these agencies may contribute to this requirement. However, decisions must be reached as to how much should be allocated for research and who will pay this cost. It was pointed out that a considerable amount of data are already available, but they must be reviewed, collated and the gaps filled in.

A team approach to research by representatives from the different disciplines is essential if resources are to be managed on a multiple basis. There is a need not only for communication between research workers, but also between research and administration in the various disciplines. More liberal funds should be made available by the federal government for research. For example, very few funds have been provided for studies of wildlife.

There is a lack of skilled personnel to undertake research programs in the resource field. It is also true that research workers now require more training in the broader concepts of multiple resource management. There was an expression that sufficient research workers are now available, but the public is not yet convinced of the need for research in the field of multiple resource use.

The following were cited as examples in Canada where ways have been found to achieve some measure of joint use of renewable resources:

1. The Strathcona Hydroelectric Project of British Columbia;
2. The Eastern Rockies Forest Conservation Board;
3. The Whiteshell Provincial Park and the Nelson River Project of Manitoba;

4. The Okanagan flood control scheme; and

5. The Metro Toronto and Region Conservation Authority.

It was pointed out that there were frequently conflicts between those concerned with hydro development and those concerned with fisheries and recreational uses of water. Taking over lands and houses for hydro projects frequently creates conflicts between the developers and private individuals and agricultural land users. It was suggested that those concerned with the different disciplines should meet to discuss their problems. All too often the agriculturist, those interested in fisheries, in hydro development, in forestry and in wildlife hold separate meetings. It was suggested that it should be possible to arrange meetings where representative specialists from all disciplines could be present. Integrated meetings of this type at a federal, provincial and regional level would be most desirable and would do much to alleviate confusion and consequent conflicts.

There followed considerable discussion of the Strathcona development by the B.C. Power Commission. Some of the problems encountered in this project were enumerated and the conflicts arising from different requirements for the prime resource, water, were discussed. It was pointed out that, while serious differences of opinions and conflicts were encountered, the Strathcona development project had provided a valuable lesson in multiple resource use. In summary, 10 agencies eventually became involved in what initially started out as a hydro development. It was pointed out that under the B.C. Water Act every proposal for hydroelectric development must go to a public hearing in order that all persons and agencies concerned will have an opportunity to express their views.

In such developments it was suggested that before any such project is undertaken a planning agency should be established. All interests should be represented and the public should be kept fully informed with regard to the objectives and planning of the program. It was also pointed out that those who receive secondary benefits from the primary use of the resource should expect to pay part of the costs of the development. Also, if any particular interest group is injured through such a project, it should be compensated for losses. It was pointed out that in many cases it was quite difficult to assign a dollar value to wildlife and recreational use. The primary consideration in approving any multiple resource project should be based on whether the project is in the public interest and is economically feasible.

The example of the Eastern Rockies Forest Conservation Board was cited as another successful multiple resource development. This Board is financed

by both federal and provincial governments. The Board makes the policy but the administration is carried out by provincial government agencies. The Board takes all interests into account such as water, timber, fishing, hunting, grazing, road development, etc.

During the discussion a need was recognized for a national council or foundation for multiple resource management which would include representatives of federal, provincial and municipal governments, farmers, fishermen, foresters, biologists, laborers and recreationists, as well as various interested corporations. It was recognized that regional development should be based on the requirements of the people of each specific region. It was emphasized that the biological productivity of each region must be assessed and used as a guideline to resource management programs.

It was also pointed out that, to achieve the maximum benefits of multiple use of renewable resources

on a continuing basis, both physical and socio-economic research will be essential. In order to support such research, funds and trained personnel will be required.

On the basis of the discussion, it was generally agreed that:

1. To obtain efficient use of renewable resources they should be managed on a multiple purpose basis.
2. In order to achieve the goals, aims and objectives, there are advantages to the regional or area approach to renewable resource management.
3. To manage our renewable resources properly, basic data, inventory and research are needed.
4. In order to meet the goals and objectives of resources management, it is necessary to have more efficient communication between and within disciplines, various levels of government, industry and the public.



# *Management Workshop B*

WEDNESDAY, October 25

To get better co-ordination of public  
and private decisions.

Chairman: L.-Z. ROUSSEAU, Dean, Faculty of Forestry Engineering, Laval University.

Co-Chairman: J. L. MACCALLUM, Legal Advisor, Canadian Section, International Joint Commission.

Lead-Off Speaker: MITCHELL W. SHARP, Vice-President, Brazilian Traction Light and Power Co.

Discussants: A. M. MOORE, Associate Professor, Department of Economics, University of British Columbia.

JOHN A. DAWSON, Research Director, Economics, Board of Broadcast Governors.

Rapporteurs: F. J. CHAMBERS, Economist, Canada Department of Northern Affairs and National Resources.

PATRICK HYNDMAN, Director, Bureau of Industrial Expansion, Quebec Department of Trade and Commerce.

## **Lead-Off Speaker (Mr. SHARP)**

I accepted the invitation to speak at this Conference because I had never before given consecutive thought to the subject of resource management. The purpose of my participation, therefore, is entirely a selfish one. I am here to be enlightened.

Often in my experience, I have found that the most satisfactory leader in a discussion of this sort is a non-expert who has no reputation to defend and who is not hampered in any way by the requirement to be consistent with his previous utterances on the subject. The other non-experts in the audience are not overawed by the speaker and the experts sit back smugly waiting to pounce, thus making for a lively and mutually satisfactory discussion.

I am expected to lead you in a discussion of the following problem:

"To get better co-ordination of public and private decisions (giving full scope to private management practices consistent with protecting and promoting the public interest in renewable resources)."

This formulation of the problem seems to assume that someone knows what is in the public interest and that we in this Workshop can proceed on that assumption.

Mr. Thorpe's historical perspective on this Conference lays the foundation. In his paper he traces the development of the conservation movement and its gradual evolution into the modern concept of resource management. I think it is fair to say that the original impetus of the movement was fear that unbridled private exploitation of resources threatened the future supply. At least this was the emotional appeal that gave strength to the movement and to some extent still does. For one reason or another, however, one of the more important being the recurring economic recessions (and particularly the Great Depression of the 1930's) during which people were concerned less with the adequacy of resources and more with the adequacy of demand, the emphasis shifted. It shifted from prospective scarcities to what Mr. Thorpe describes as rational development. It came to be realized that the public interest and the true interests of private individuals and corporations in the development of resources were less in conflict than had once been thought. As time went on it also became clear that fears of impending scarcities had been exaggerated even though consumption levels greatly exceed those upon which these fears of impending scarcities had been founded. Resource management came to be as much concerned with the present as with the future.

And now we are in a third stage in the development of the concept of resource management. Conservation or resource development has become a means to an end, an instrument of economic policy, a means of helping to attain general economic and social advancement and stability. The wheel has come full circle. Steadily rising consumption is no longer considered to threaten the supply of resources for tomorrow but to be necessary to steady economic growth.

As Mr. Thorpe points out, however, the evolution of concepts has been gradual, not abrupt. The idea of conserving resources for the future remains as an essential element of resource management. So does the idea of rational integrated development on a regional or national basis.

In the days when simpler ideas of conservation prevailed, the approach was often, or so it seems to me, essentially negative, although the underlying purpose was constructive enough. Private individuals and corporations were to be restrained from using resources in such a way as to destroy their future value and were to be required to put conservation measures into practice.

Regulation remains, of course, an essential feature of any program of conservation or resource management and the need for regulation has not decreased even with the more sophisticated approach to resource management that now prevails. On the contrary, the need for regulation has, in many respects, become more urgent, particularly to support the planned and interrelated use of scarce resources within an area.

The big change in the approach to resources management is increasing recognition that regulation is only the beginning and that the regulations themselves require constant review on the basis of experience and changing circumstances. Over the years there has been increasing recognition of the importance of guiding and encouraging as well as of restraining the normal drives of private individuals and corporations and of the importance of positive as opposed to negative activities by the public authorities. To put it another way, the emphasis today and at this Conference in particular, is upon positive economic development.

I should add, however, that there has also been another important shift in emphasis in recent years in the approach to resources development which is of importance to the proceedings of this Conference, namely a recognition that resource development—both of renewable and non-renewable resources—is not necessarily the key to a higher level of economic growth. Indeed, there are some who would contend that resources development was overemphasized in the recent past and that this is one of

the reasons why we are suffering from persistently high unemployment today.

Whatever the validity of this analysis, the proposition that the future of Canada is dependent solely or even predominantly upon the efficiency with which we develop our natural resources is a more doubtful proposition today than it was even a few years ago. These are valuable assets, but their possession does not *by itself* assure a bright future, regardless of how wisely we use, develop and conserve them.

Let us therefore approach our task with a proper sense of modesty and proportion. This Conference is concerned with many highly important matters. It is not concerned with the whole range of economic problems confronting Canada at the present time and it is only going to confuse the issue to claim or expect too much.

Nor is this Workshop concerned with the whole range of problems involved in the co-ordination of public and private decisions affecting the economic development of Canada, but only with some of them, namely those concerned with the management of renewable resources.

You will not expect me to draw to your attention all the issues raised in the Background Papers bearing upon the co-ordination of public and private decisions. Instead let me, as your opening speaker, attempt a few generalizations.

First, I believe, and the Background Papers support me in this belief, that with few exceptions the private owners of renewable resources welcome the assistance of government in solving their problems. Not only do they welcome the assistance of governments but they accept the necessity of regulation. In other words, in principle at least, there is today no open antagonism between private owners and public authorities in the management of renewable resources.

I think this is a good point to make at the beginning of our discussion in this Workshop because otherwise there may be a temptation to tilt at windmills. Private owners, in Canada at least, seem long ago to have abandoned the idea that their ownership gives them unlimited rights to use their property as they see fit regardless of the public interest.

Indeed, it seems to me that the shoe is now on the other foot, in some fields at least. Whatever it is, I do not think it is the opposition of private owners that forms the main obstacle in the way of adequate public policies in the field of resource management.

Reading the Background Papers one is impressed by the number of times that government is urged to do more, not less. And even when papers are critical of the actions of public authorities it is on the ground that these are not such as to promote good management or that they are mutually inconsistent.

I could give appropriate quotations from almost every one of the Background Papers to support these statements but I think my point is best illustrated by papers written not by people who might be thought to have an interest in an increased bureaucracy but by men in private industry. For example, this is part of the conclusion of the paper by Mr. Pepler of the Canadian Pulp and Paper Association on present forest policies:

"In the past 15 years, the forestry situation in Canada has been studied and reported on by Royal Commissions in seven of the ten provinces, and in the country as a whole. This is sufficient evidence to indicate widespread public interest in sound *forest management* policies. However, it is not sufficient to identify forest policy with sustained-yield management which does not automatically, and by itself, bring in its wake all the values that are obtainable from the forest. What has not been fully appreciated to date is that there must be sound *forest* policies with all that such policies imply.

"Keeping in mind that a forest policy is made up of a large number of interrelated policies, it is desirable that present policies be reviewed to ensure that all component parts are appropriate for the current development stage.

"In an orderly scheme of things, policies are set by owners. In Canada, then, forest policies should be established jointly and put into practice by provincial governments, farmers with woodlots, industrial corporations and individuals, other private owners, and the federal government. However, governments at all levels, although not the owners of certain forest lands, have special responsibilities for the derivation of benefits from the use of the land for the population as a whole. Therefore, to this extent and by reason of their ownership of the bulk of our forests, government must have an overriding voice in policy making."

Or to take another excerpt, this time the paper by R. S. Johnson and L. Holt of Bowaters on forest management practices on private lands:

"The solution is obvious, but apparently not very attractive. Education (both public and individual), research (fundamental and applied), and other voluntary aids are all increasingly needed. But all these will be too late and too little unless the basic structure is secure. This basic structure, of course, is legislation.

"We must have taxation and other legislation, both federal and provincial, which encourages rather than hampers sound forest management. We must also have legislation which, while allowing the owner discretion in managing his property, will prevent practices harmful to the community.

To the extent that this might otherwise inflict economic penalties on individuals, public funds should be used to support the policy.

"Legislation of this kind need not be complex or hard to enforce after the initial breaking-in period. The choice for Canadians is simply this: either continued impoverishment of private forest lands, with all this entails, or some restrictions on freedom of action over private forest properties, mitigated by public financial assistance.

"The authors do not predict doom; they believe that Canada as a whole has the resources to increase its output of forest products with or without improved legislation. However, without private land legislation, increased production will come mainly from Crown limits, and Canada's future prosperity growth will largely bypass those communities where private forest holdings today contribute their share of wealth and work."

My first concrete suggestion, therefore, is that one of the most useful means of achieving better co-ordination between public and private decisions in the field of renewable resources management is for public authorities to make their policies as clear and comprehensive as possible and to bring their regulations into line with their policies. Private owners will then at least know what is expected of them.

My second suggestion is an extension of the first. It is that public authorities should wherever possible be positive, not negative. I was particularly impressed by the way that the Community Planning Association of Canada—Ontario Division—made this point in its submission to the Conference: "Because of the critical importance and limitations of our national resources, it may not be good enough to indicate only how they may not be used: it may be necessary to state positively how they shall be developed."

Particularly, of course, is this important in the field of urban and regional planning, which I venture to suggest is the crucial issue at this Conference, as well as the most difficult. (Here) is the most urgent need for better co-ordination of public and private decisions for it's here that lack of co-ordination has the most direct and immediate effects upon peoples' lives today and tomorrow.

I do sympathize, however, with those who have the responsibility for deciding what should be done about regional planning as illustrated by the conclusions of D. W. Slater in his paper on "Trends in Industrial Location in Canada," which all enthusiasts for regional planning should be required to read:

"First, the metropolitan region as a whole is the relevant unit for local area actions to promote industrial development. The divided local jurisdic-



tions in many of our greater city areas and the scrambling to capture the prizes and avoid the over-all responsibilities of industrial assessments which divided jurisdictions induce, will not lead to a rational job of local industrial development. Second, if there are advantages to a decentralized pattern of industrial location, some of these accrue to broad regions and provinces as a whole; some of them are national. Thus it is sensible that some provincial and federal resources be used to provide incentives to encourage the desired pattern of industrial location. But I have very grave doubts about the abilities of governments to follow sensible policies in these areas."

The lesson from Professor Slater's paper is that one should have modest rather than unattainable objectives in this business of regional planning, or as he himself says: "The really important part of public policy with respect to industrial location is concerned with shaping the environment and providing incentives to encourage or discourage particular patterns of locational decisions."

But whatever the limitations, whatever the risks of mistakes, more adequate planning on a regional basis there must be. Ugly urban sprawl, poor communications, lack of recreation areas, water pollution, destruction of natural beauty spots and so forth. These are the results of lack of planning.

They are also in the main, of course, the results of decisions of private owners. But are the private owners really to blame? Were they not often encouraged by the public authorities to do exactly the things the results of which we now deplore? In any event they usually did what appeared to be sensible.

I return to my main theme. Private owners of renewable resources are just as interested, I believe, in rational development as any one else in the community, in many cases perhaps more interested. The problem, it seems to me, is not to convince private owners of the need for planning but to improve the machinery for consultation and effective decision. Regional planning boards provide ideal facilities for co-ordination of public and private decisions and I believe, as do the writers of several of the Background Papers, that one of their chief functions is to enlist the co-operation and support of private owners.

I have only one criticism of the Background Papers that are before us, and that is that so few of them are written by or on behalf of private owners. I do not mean by this to suggest that the papers before us are unduly critical of the activities of private owners. On the contrary they are eminently fair in their treatment.

It would have been useful, however, to have before us a greater representation of the views and attitudes of private owners and in particular their

suggestions for better co-ordination of public and private decisions. I made a quick count, and out of the two fat volumes containing in all 80 papers, 4 papers only could be considered to be written by or on behalf of private owners or entrepreneurs.

As I have already said, I do not profess to know much about management of renewable resources, but I have had some experience both in private business and in government. More and more I have become impressed by the need for understanding and co-operation between government and business for the attainment of national economic objectives.

We are entering upon a new phase in the development of techniques for attaining and maintaining adequate levels of economic growth. I suppose that as a nation we have always had national economic objectives in the sense that we are striving for the highest possible gross national product, the minimum level of unemployment, the removal of poverty, and so forth. I suggest, however, that the time has come when our national economic objectives shall have to be more definite and a more conscious effort made to co-ordinate the activities of all concerned in attaining them.

While it seems to me that this conclusion is inescapable, I am concerned that we should not fall into the error of placing too much confidence in public authorities, be they local councils or the federal government. Co-ordination, not direction, should be the watchword, so that the great values inherent in private initiative and enterprise can be preserved and utilized for the general advantage.

The way in which we are able to achieve better co-ordination of public and private decisions in the management of renewable resources may provide a test of how well we shall be able to achieve co-ordination of a wider front.

#### **Discussant (Mr. DAWSON)**

Mr. Sharp has presented a paper in which I find little with which I disagree. I agree wholeheartedly with his emphasis on positive rather than negative "regulation" and with his recognition that the role of renewable resources is not an overwhelming factor in economic growth. We also have the suggestion that, to achieve better co-ordination between public and private decisions in the management of renewable resources, public authorities should make their policies as clear and comprehensive as possible and bring their regulations into line with their policies. I would take it from his earlier remarks that he would feel that these policies should be framed within a broader context than renewable resources and I would agree with this view.

There is only one area of the paper with which I am a little uncomfortable. It is impossible for me to disagree with his statement that the economic and

social problems of the world today are too complicated to be handled by the government simply laying down the rules and hoping for the best. This implies, of course, that there is a need for understanding and co-operation between government and business for the attainment of national economic objectives. In connection with this reasoning, however, I have an uneasy feeling of being led down the garden path to a beautiful garden in which the flowers may all in due course wither away because of the lack of some crucial element in the soil in which they grow—to be specific, competition. The manner in which we proceed with this “understanding and co-operation” needs further amplification. I would agree with Mr. Sharp if he has in mind nothing more than the removal of negative regulations which impede desirable resource uses and the addition of positive incentives. I would not agree if “understanding and co-operation” lead to an insulated business community with the Canadian consumer in an exposed position.

My comments to this point have been general. Can we shift to specific areas and avoid getting lost in the maze of problems that face us? Turning to the fisheries area and the reconciliation of public and private decisions, it appears to me that there are a number of regulations that prevent individuals and firms from conducting their businesses with any degree of efficiency. I can think of no other industry where the hurdles are placed and remain so high. I would gather that this is conditioned by the common-property ownership of the fisheries to a considerable extent.

In the field of agriculture there are many issues in the relationship between private and public decisions but they do not appear to me to be predominately in the realm of renewable resources. In their paper on “Land Use Planning and Development,” C. C. Spence and H. K. Scott place some emphasis on the divergence between society’s “desire to maintain the land resource so that it will be available for the use of future generations” and the individual farmer’s “shorter-run interest.” Problems may exist on tenant-operated farms. To the extent that they do, I would suggest that the solution lies within the sphere of the contractual relationships between the individual landowner and the tenant rather than in the sphere of co-ordination of private and public decisions.

In the water resources field it does not appear to me that a broad area of co-ordination between public and private decisions on an individual use basis is called for except where we have situations in which actions of business firms (or individuals) have a harmful effect on others. In the economic jargon this phenomenon gets labelled as a divergence between private and social costs. In the power field I do not

think this issue is of great importance. In the use of water for carrying off wastes, however, it is of tremendous importance. The multiple uses to which water is put raise, of course, additional problems in the co-ordination of public and private decisions, but rather than open up a broad discussion of this topic here I commend to you the excellent discussion in yesterday’s Workshop on benefit-cost analysis in water group B by A. D. Scott in which he dealt with the importance of the point of view a person adopts in conducting benefit-cost analyses.

I have no particular comments to make on the fields of wildlife and recreation except to note the importance of the resource base for recreation in the urban setting. In the field of urban and regional planning, I would agree with Mr. Sharp that we have an issue of crucial importance at this Conference. My comments relate to urban-centered areas but related problems exist in more sparsely settled regions. The magnitude of the problems in metropolitan areas of Canada are readily apparent. Private actions of one individual or firm have substantial effects on the position of other individuals or firms and the resolution of these effects is in many cases not subject to the control of the market place. Furthermore, it is unlikely that our present pattern of urban living approaches an efficient arrangement. I believe that we would be wise to examine the feasibility of crediting and charging individuals, firms (and governments) directly for the benefits and costs which accrue because of their actions much more completely than we do at the present time. Is it impossible to charge firms for the units of smoke they send into the air or to place charges per unit on industrial waste put into the water? Do we have appropriate means of charging dwelling and industrial owners for the services they require in a community? Raising these questions is not to disagree that regional co-ordination is involved.

May I conclude my remarks by referring to the topic of the Workshop as cited in the program guide in the blue book—“to get better co-ordination of public and private decisions (giving full scope to private management practices consistent with protecting and promoting the public interest in renewable resources).” This implies the need for government policies in the field to be so designed as to bring private incentives in line with public objectives. Physical restrictions on the use of resources do not yield this result. Financial incentives or disincentives do.

#### Discussant (Mr. MOORE)

The topic assigned to this Workshop and to the leadership group is: “how to achieve a better co-ordination of public and private decisions”—which is



amplified as "giving full scope to private management consistent with promoting the public interest in the renewable resources."

In the actual circumstances of Canada today, the two statements do not always have the same meaning because our public policies and decisions do not always promote the public interest.

Further, it is not clear that governments are encountering many difficulties in co-ordinating private action and public decisions. The standard practice, since most of our renewable resources are Crown-owned, is to issue regulations indicating what may and what may not be done and the regulations are enforced by penalties. Often, however, the endeavors of private management to economize in the use of the renewable resources are frustrated by public decisions—with regard to the forests, for example.

Finally, given public policies which are consistent with the public interest, it should not be difficult to harness private initiative to the realization of public objectives by using the appropriate prices, fees and penalties.

To tackle our assignment we ought to decide what the public decisions and policies ought to be with respect to the renewable resources and then decide whether a set of prices and penalties, based on costs and benefits, could achieve the desired co-ordination.

It seems to me that the nature of most public decisions concerning our water power resources can be concisely summarized. These decisions follow the economists' standard rules of:

1. Employ capital and exploit the resources up to the point where the added benefits are just equal to the added costs; and
2. Choose the lowest-cost method of achieving a given benefit.

For the fisheries and the forests, however, I do not think that it is possible to deduce from observation—or from the Background Papers—just what our public policies are. But it does appear that the basic rule of matching costs and benefits (which serves the public interest) is not followed.

In the case of the fisheries, an invariable constituent part of public policies is the prevention of a depletion of the stock by overfishing. This is probably, perhaps undoubtedly, always a sound public decision but it is given *ex cathedra* rather than being derived from considerations of benefits and costs. In the conflict between fish and power, the benefit-cost rule is clearly not invoked.

Neither is the minimum cost rule used. The benefit derived is the net income attributable to the fish (as distinct from that attributable to labor and capital). But we do not use the minimum labor and capital required to realize the net income produced. To do so would require a limitation upon the freedom

of exploitation of this common-property resource. This point is emphasized in Crutchfield's Background Paper.

One of the cardinal public policies for the forests is that the maximum allowable cut in a designated area should not be allowed to exceed the rate of growth (with some modifications to take account of the heavy stocking of virgin stands). In some circumstances there may be a sound justification for this rule but it, too, seems to be derived *ex cathedra*. Since it is not based upon considerations of costs and benefits, however, it must surely reduce the net contribution made to the economy by the forests by forcing licensees to incur extra costs of access roads, inventory surveys and cutting plans which produce no tangible return. This and other conservation rules have probably reduced the amount of economic development which might have been realized from the utilization of the forests to their economic optimum.

One may go further to point out that there is a strong body of opinion among professional foresters—which is reflected in policy decisions by the provincial forest services—that certain capital costs should not be included when the extent of the investments to be made in the forests is decided. This view is exemplified in the Background Paper by Love.

The technique for inducing a tenant to make the most productive use of the resource he rents has been explored exhaustively for almost two centuries. The way to go about it is to charge a certain, predictable rent which does not vary with the quality of the tenant's performance so that the returns to his capital and labor accrue to him and not the landlord. And the tenant's term must be long enough for him to recover his investments in the resource. Surely this should be the starting point for any discussion about giving full scope to private management practices.

When we turn to the other half of the assignment—protecting the public interest in the renewable resources—I suggest that we should be precise about the damage to be prevented. And we might do well to make the punishment fit the crime. If it is something straightforward like the pollution of the air or waters, ought we not to charge the polluter for the damage done by his pollution?

There is likely to be more dispute when we turn to the conservation of certain renewable resources. Where nature has provided us with a valuable supply of sawlog timber, ought we to insist that the private owner or the tenant to Crown lands preserve that supply? Or should he be allowed to replace it with pulpwood? Surely only a calculation of costs and benefits provides the answer.

Everybody agrees that wherever the social costs or benefits which result from the use of a resource differ from the costs or benefits which enter the



calculations of the private party who exploits the resource, our property laws ought to be changed to make private decisions conform to public interest. In a free society this is done by compensating the owner for losses sustained in the provision of services which accrue without charge to others, including the next generation. The calculation of compensation for loss curbs any tendency to overenthusiasm in these matters. If some of our foresters had their way, private woodlots and plantations would be regulated. But it is not sufficient to assert vaguely that damage to a resource sometimes results. Where a specific social loss has been established, an inducement, not

force, is appropriate. And the most convenient inducement is a monetary one.

Finally, I suggest that we should be on our guard against falling into the trap of mistaken objectives. First of all there is surely no point in conserving for the sake of conserving. What earthly use could we make today of all the buffalo that used to roam our prairies? Second, in our enthusiasm we should not inadvertently assume that what is good for renewable resources is good for Canada. Why should we want to maximize the size of our resource industries in our gross national product?

## DISCUSSION

In discussion it was pointed out that a "clear-cut government policy" should not rule out flexibility to meet changing circumstances. Sound resource policies require regular review and amendment.

One member of the group asked how cost-benefit analysis could be employed to evaluate alternative uses of a resource where one of the services is not evaluated in the market. He cited as an example the conflict between wildlife and logging in Algonquin Park. It was pointed out that cost-benefit analysis provides a method by which the proper rates of recreational and commercial usage could be approximated.

The discussion then turned to the question: To what extent can resource problems be resolved by governments?

In general this depends upon the nature of the resource in question. For example, efficient production from small private woodlots appears to require research, grading and marketing assistance from government; however, there is a great deal of room for private initiative once these basic services are available. At the same time, unregulated private enterprise in the fisheries might lead to the complete destruction of the basic resource. Much has been accomplished in the conservation of water in various watersheds through co-operation of private individuals, and similarly private organizations can facilitate urban development planning on their own initiative. The fundamental problems of agriculture cannot be dealt with by individual action and will require extensive government participation.

It seems apparent, however, that at some stage, the efficient exploitation of every resource calls for some level of government to involve itself in some manner. The government may be a prime sponsor of plans, a partner with private owners or exploiters of resources, or merely a regulator and enforcer of

plans primarily designed by the industries or groups concerned. Governments may also be called upon to resolve mutually inconsistent private plans for resource use in the interest of the common good.

The Workshop then directed its attention to the second question: What can be done by governments to resolve resource problems in co-operation with private enterprise?

A question was raised regarding the extensive government regulation of the forest products industry in Canada. It was pointed out that many segments of the industry are made up of small units which cannot finance necessary research and development programs. In addition, the government is the largest single owner of forest land in Canada and must share responsibility for fire protection, access roads, and harvesting standards with its lessees. Long-range planning by private enterprise also requires clearly enunciated and stable government policies. It was also suggested that governments could provide a very valuable service to the forest industries (and other resource industries as well) through sponsoring educational documentary films and television programs. These devices would acquaint the general public with the problems of resource use, and suggest how the public could contribute to conservation and efficient use of the renewable resources.

It was also suggested that federal, provincial and municipal governments review the taxation on forest industries to remove anomalies which now exist. Inefficient cutting and use of wood is now often encouraged by current tax laws, and there are also certain inequalities of tax burdens between the provinces which it would seem advisable to ameliorate.

In dealing with agriculture, the Workshop agreed that an orderly solution of basic agricultural prob-

lems could not be found while there is an absence of vigorous growth in the industrial sector of the economy. A rapidly expanding economy would permit the absorption of the excessive agricultural labor supply which is the major economic and social problem in Canadian agriculture today. The Workshop considered two ways of attacking the immediate problem: reduction of output through the diversion of resources from agricultural use, or adoption of credit and land use policies intended to raise the per capita income of the agricultural sector.

In some respects, fisheries suffer from the same problems as agriculture. Excessive amounts of labor in the Atlantic fisheries have reduced incomes to the point where modern, efficient gear cannot be financed. As in agriculture, alternative employment opportunities are extremely limited. In the lobster fishery and the major Pacific fisheries limited supplies and steadily increasing prices have attracted excessive numbers of men and vessels. It is felt that government conservation policy must be aimed at improving the efficiency of the industry. This may require restricted entry in fisheries where supplies cannot be expanded. There was general agreement that specialized technical and scientific training should be provided for fisheries personnel.

The group felt that wildlife and sport fishing require special consideration because of the difficulty of measuring the money value of these activities. Only governments can develop these resources effectively. This is another area where there is a shortage of trained personnel, and governments should hire university students during the summer

months to attract qualified persons to the staff of wildlife and associated resource management organizations.

The group felt that government contributions to urban planning and development could be most effective through the provision of leadership and technical staff to local planning groups. Governments would also be required to resolve conflicts for resource use among competing groups and to ensure an orderly regional development.

The group suggested that active government participation would be required for optimum utilization of Canada's scarce and valuable water resources. Particular reference was made to the need for research into pollution control and education for conservation of water.

The third question which the Workshop considered was: Does the co-ordination of public and private decisions call for new working agreements between government and private enterprise?

It was noted that there are already many agreements in existence in the forestry and water resource sectors which establish a pattern for future agreements in those areas. These agreements are normally contained in the leasing arrangements from the Crown. There is a wide diversity in these arrangements between provinces and between companies. A licensing system for fisheries was recommended which would parallel closely the arrangement in the forest industries. Under this arrangement the government would assume a stewardship of the basic resource.

# RESEARCH

Wednesday, October 25, 1961

"If there is one overwhelming conviction that I sense above all others in the Background Papers, it is the need for a greater awareness of the responsibilities of government and private industry in research and resource development. . . . Without in any way underplaying (the) vital and expanding role of the private sector...it is clear that governments must play a leading role. . . . This will require not only the expansion but the better co-ordination of government activities at the different levels. This expansion of the role of government is required because of our social and economic objectives of full employment and rapid and balanced economic growth. It is required because of problems of conflicting use which only government can solve. It is required because of problems of technical complexity, because of problems associated with attempts to gain economies of scale, because of problems of public or common ownership of many of our renewable resources."

*Dr. M. W. Menzies, Lead-Off Speaker, Research Workshop A.*





# Research Workshop A

WEDNESDAY, October 25

To determine the more important deficiencies in the scope of present research programs in meeting problems under discussion.

- Chairman: E. W. R. STEACIE, President, National Research Council.
- Co-Chairman: C. R. SMITH, Director, Chemistry, Soils and Fertilizer Service, Nova Scotia Department of Agriculture and Marketing.
- Lead-Off Speaker: M. W. MENZIES, Grain Policy Advisor to the Minister, Canada Department of Agriculture.
- Discussants: H. W. R. CHANCEY, Superintendent, Newfoundland Experimental Farm.  
.PHILIPPE GARIGUE, Dean, Faculty of Social Sciences, University of Montreal.
- Rapporteurs: ANDRE LAFOND, Professor, Faculty of Surveying and Forest Engineering, Laval University.  
G. B. LANGFORD, Head, Geological Sciences, Faculty of Arts and Sciences, University of Toronto.

## Lead-Off Speaker (Mr. MENZIES)

I think we must begin by asking ourselves some fundamental questions about our basic problems and objectives. While I have been forced to approach my task from the viewpoint of an economist to provide some common ground for our discussions, I hope I have done so with a lively awareness of the role of the scientist in the developmental process and of the need to increase our efforts in the fields of applied technology and specialized scientific research.

### *Aspects of the resource development problem*

No one, I think, doubts that our objective of optimum resource development is basic to Canadian economic development. By the same token there seems to be general agreement on the main aspects of our resource development problem. If you reflect on yesterday's sector workshops, you will see that they were broadly divided between physical development problems in Workshop A and resource adjustment problems in Workshop B; in agriculture, for example, between land maintenance and improvement on the one hand and agricultural adjustment on the other. However, since physical development

depends both on resource potential and on demand potential, we can redefine our problem of resource development as having three broad but completely interrelated aspects; namely, market expansion, physical development and resource use adjustment.

This broader view of the resource development problem seems to be what Pepler had in mind when he drew the important distinction between forest policy and forest management policy—a distinction equally valid in the other resource fields—for example, between agricultural policy and farm management policies. Pepler asserts that “the objective of forest policy should be to secure for the economy as a whole the greatest possible present and future benefits consistent with the balanced exploitation of all resources. This implies multiple use of the forest and its development at a rate consistent with the probable demands upon it within the predictable future.” He adds that while most provinces have fairly well-conceived and quite similar forest management policies, even a rudimentary forest policy in Canada is hard to discern—if indeed one exists. “It is,” he concludes, “as though we had tactical procedures galore with no strategy worthy of the name

to co-ordinate them." While any one of the three aspects of the resource problem we have mentioned (market expansion, physical development and resource use adjustment) may prove to be the limiting factor in the development of a particular resource, problems in all three areas combine to form our resource development problem as a whole. Clearly, in all three areas research is a fundamental need.

#### *Environment for development*

Love, in his paper on the forestry sector, states that while the first responsibility of the resource manager is to produce the best of which the resources are capable within the situation prescribed by the national economy, he must also do his utmost to obtain a favorable economic environment. In research terms, we must be concerned, not only with pure scientific research and problems of applied technology, but with broad policy research problems as well. If the general policy environment is not conducive to expansion, if the goals are not those applicable to an economy operating at full capacity, we will certainly not be able to solve adequately our adjustment problems, whether they be technical, economic or social. Nor will we be able to solve our physical development or market expansion problems as effectively as we would like. Therefore, I think we should consider briefly this question of the appropriate environment for development.

Since market expansion is one of the factors on which resource development depends, we are forced to consider our resource problem, not only within the national context, but within the context of the world economy. In the world economy human needs are expanding at a far more rapid pace than the means presently employed to make these demands effective. In recent years the developed countries have done a reasonably good job of tackling the problem of effective demand on a national basis. I think, however, that despite national countercyclical policies, the spectacle of unused capacity and increasing trade restrictions existing side by side with growing but unsatisfied human demands suggests that our problems are only fully soluble within an expanding and prospering world environment.

This brings into question the adequacy of our economic thinking on major policy issues. The Keynesian solution was primarily an attempt to establish prosperity on a national basis by attacking directly the problem of distribution and indirectly the problem of short-run economic instability by general monetary and fiscal means. If we define the problem of the unregulated, pre-welfare-state economy which Keynes was attacking as one of affluent classes in underemployed economies, the problem that we face today is one of affluent societies in an underdeveloped world. Prosperity, like peace, is in the long run

indivisible, and I think we now see that the Keynesian national solution cannot be fully effective in creating the proper environment for development without progress in meeting the broader international problem.

I have said that one reason why our modern economic thinking is inadequate is its national bias, whereas we in fact live in an interdependent world as John Donne knew several centuries ago when he learned "for whom the bell tolls." But our modern economic policy is also inadequate because its short-run objectives of economic stability are fully adequate only to mature industrialized economies. These limited objectives, though essential, are not sufficient to meet the quite different, more complex and intractable long-run problems of resource-based economies. Where the basic economic problems are those of long-run growth, not short-run stability, where they are concerned with the complex physical and economic problems of resource and regional development, not with comparatively simple countercyclical policies appropriate to homogeneous industrialized states, where they are concerned with world markets rather than with comparative national self-sufficiency, then governments simply must and do become directly involved in the development process, whatever the prevailing theory.

On reflection, I see some danger of this last sentence reminding our pollution experts of the crystal-clear condition of the Ottawa River immediately below the National Research Council. It may, in other words, be as clear as mud. What I am saying, in simple terms, is that Canada is in many essential respects an underdeveloped country. You will recall that Professor Easterbrook arrived at this same conclusion through a study of economic history, rather than through economic analysis—the same conclusion reached by different paths. What I am concerned about is the danger to Canada of adopting—rather than adapting—policies appropriate to developed countries, and looking on such policies as panaceas for our special brand of problems.

If we look at our Canadian resource problems carefully, we will see that they are predominantly developmental in character rather than Keynesian; perhaps they might be said to be more physical than fiscal. Recognition of this fact was, I think, delayed by the high postwar demands for the products of Canadian resource industries, which caused some to conclude that governments could concentrate on maintaining short-run economic stability and play a relatively passive role in development. Recent changes in the world environment and the widespread growth of excess capacity have at last convinced most of us that our long-run problems of regional and resource development, of agricultural and resource adjustment and of market expansion



are not transient difficulties associated with the business cycle, but are fundamental structural problems demanding direct and positive measures in both the public and private sectors. If we did not believe this, I doubt if we would be attending this Conference today. The federal Agricultural Rehabilitation and Development Act might be cited as the kind of direct attack needed on adjustment problems and the proposed World Food Bank as an example of market expansion, helping to make effective growing world demands for food. At a time when the labor force is rapidly expanding and a continuous improvement in technological efficiency is taking place, our economy cannot operate at full capacity unless these structural and long-run problems are solved. And only a buoyant and growing economy can provide the larger and larger revenues needed to fulfill our national aspirations and meet our international obligations.

#### *Major problems in resource policy*

We have considered the need for policy research into problems associated with the creation of an environment conducive to an adequate rate of economic growth. But we must also concern ourselves with the responsibility of the resource manager to produce the best of which the resources are capable within the existing environment. When we begin to consider the manifold problems involved in this responsibility, we immediately become aware of the need for some simple method of classifying the major problems and their possible solutions in the various resource sectors. Our approach must embrace the whole range of human activity in the resource field, from the setting of research priorities in the field of the natural sciences, to the study of the economic and social consequences of applying the results of such research and, indeed, to the whole development and adjustment process. This comprehensive view requires that we look at any complex resource problem from both the demand and the supply side. We must see in the expansion of markets on the one hand, and in resource development and adjustment on the other, two inter-related aspects of the wider resource problem. This *interrelationship of demand and supply*, as well as the *interrelationship of resources and their multiple use*, in short, their economic and physical inter-relationships, are underlying themes of the Background Papers and will serve as guideposts to the major problems in resource policy.

When we look at the six resource sectors in this light, bearing in mind our goal of accelerated and balanced resource development, we can distinguish two broadly different limitations on development. In the case of agriculture, fisheries and forestry, we find, as far as our goal of development is concerned

the limiting factor in the short run, to be primarily on the demand side. The immediate problem is one of finding adequate markets for the products we can produce in increasing abundance. In the case of recreation, water and wildlife, the limiting factor, in the short run, is primarily, but not entirely, on the supply side. The supply problem, it must be stressed, is not characteristically one of potential, but of underdevelopment.

I am aware, of course, that these categories are oversimplified, particularly when the long run is taken into account. For example, while we can maintain in the short run that the limiting factor in the development of agriculture, fisheries and forestry lies primarily on the demand side, we must recognize that what happens on the supply side has a direct bearing on the competitiveness of the products of these sectors in domestic and foreign markets. Mackenzie shows, for example, that the role of supply factors in Canadian fisheries appears sometimes to be dominant in price formation and consequently in market determination. He is concerned about fisheries based on species inelastic in supply. While margins exist for increased utilization of these species, Mackenzie thinks these margins will be narrow and concludes that an increase in productivity will remain urgent. Therefore, demand does set limits to production and development, but inadequate research, structural maladjustments, capital rationing and inefficient management resulting in rising costs and soil, forest, and fish stock depletion also set limits to markets, in the short run by limiting productive efficiency and in the long run by restricting supply.

This more sophisticated view does not detract from the value of approaching the problems of a resource sector from a particular point of emphasis. We can, for example, place the primary emphasis in agriculture on the need to develop adequate markets (certainly an underdeveloped area in agricultural research) without in any way underplaying the importance of research, management, capital and adjustment problems which must be solved if short-run problems of competition and long-run requirements of the market are to be met. The economist is therefore fully aware of his dependence on the scientist. At the same time the scientist is equally aware of his dependence on the economist. For example, in paper after paper dealing with the supply side of the agricultural problem, authors (to cite two, Weir and Shebeski) are acutely aware that the factors which limit the application of even presently known technology to agricultural practices are primarily economic. While it can therefore be maintained that demand is the immediately controlling factor in resource development in these sectors, the appropriate supply response is fully as vital in main-

taining efficiency and market competitiveness in the short run and supply availabilities in the long run.

Similarly, in those sectors dominated by problems on the supply side, greater sophistication is required. We may legitimately consider the principal limiting factor in the development of our recreation, water and wildlife resources to be primarily on the supply side. At the same time we may, with equal legitimacy, think of the limiting factor as the problem of making effective, through governmental and corporate decisions, the collective demands of the community for the products of these resource sectors. The inescapable need for government and corporate enterprise in this area derives from the fact that, for economic, jurisdictional and administrative reasons, individual demands in these resource sectors can be registered only imperfectly in the market place—for example, in the matter of water pollution, the provision of parks for recreation and the maintenance of migratory waterfowl and wildlife populations. While we think of public policy in these areas of recreation, water and wildlife as paramount on the supply side, public policy is also involved in a very direct way on the demand side. To take a very obvious example, decisions to export or not to export power may directly affect the pace and course of resource development. Thus there can be no doubt about the need for comprehensive and continuing research to bridge existing gaps in our knowledge concerning the character of present and future demand for, and the potentialities and limitations of the supply of, our renewable resources.

#### *Deficiencies in scope of research programs in resource development*

We have discussed the need for policy research into the problems associated with the creation of the right environment for rapid growth. We have discussed the need for broadly based research into the problems and potentialities of the demand for and the supply of our renewable resources. We have now reached the stage where we might take a closer look at deficiencies in the scope of research programs in resource development. Yesterday's sector workshops shed much light on particular research deficiencies in the renewable resource sectors. I think my comments in this connection should be of a general nature, less concerned with detailed research deficiencies than with the scope of research as a whole. Perhaps I might illustrate these general considerations by reference to agriculture.

We all know of the profound social and economic changes sweeping through rural Canada in the wake of revolutionary changes in technology and demand conditions. Unfortunately, we know little about the nature of these changes and are doing remarkably little to find out. It has been estimated that just

over one per cent of total expenditures of federal institutions contributing to agricultural research in Canada is invested in economic and social research carried out by the marketing service.

Clearly we must greatly increase our research efforts in the field of the social sciences to gain insight into some of agriculture's most vexing problems; for example, the problem of chronic low-income areas, the problems of marketing and trade and the role of public policy in agricultural adjustment. At the same time, in view of the expected growth in, and changes in the composition of, agricultural demand, we must continue and even increase our scientific and technological research to meet future demands for increased total production. But while there can be no doubt that we need to intensify our research efforts in the fields of pure science, applied technology, market development and social and economic research, we should keep in mind that social and economic research is the most underdeveloped area of all our research activities in agriculture at the present time.

In general, somewhat similar conclusions might be drawn in the case of fisheries. The serious problems of low income and low productivity among Canadian fishermen in a period of rapid technological change demonstrate the imperative need for social and economic adjustments in the industry. Compared to the emphasis given to social adjustments in agriculture, these have received relatively little attention in the Background Papers dealing with fisheries, perhaps because of the smaller number of people involved and because the family as an economic unit is more rapidly becoming obsolete. Given the special nature of the supply problem, and its price effects on a competitive market, the emphasis given to scientific and technological research in the fisheries papers may well have been right. At the same time, the human problems must be solved within the context of the multi-purpose development of our renewable resources. Since many of our fishermen are engaged in part-time agriculture and woodlot operations, as well as fishing, and have more than a passing interest in water, recreation and wildlife, the federal Agricultural Rehabilitation and Development Act can and should be shaped into an ideal multi-purpose instrument to aid in the solution of these economic and social problems.

In pursuit of our goal of multiple and optimum use of our resources to support rapid economic growth, we badly need to institute a national program of maintaining comprehensive and continuing resource use inventories. But assuming we have the inventories, our task of resource development and adjustment has only begun. This task requires broad, indeed, comprehensive, planning within the different levels of government and, co-operatively,



between them, not only because of the inherent complexity of efficient multi-purpose development, but because economic and social research cannot be separated in multi-use planning from technical research, or technical research from economic and social planning.

If there is one overwhelming conviction that I sense above all others in the Background Papers, it is the need for a greater awareness of the responsibilities of government and private industry in research and resource development. In the private sector, self-interest alone should ensure that our resource industries maintain and quicken the pace of technological progress. They can only do this by investing more of their resources in scientific research. At the same time, our industrialists will have to practice the most imaginative kind of business enterprise. They must lose no opportunity to improve the quality of their products, to create new products, to develop new uses and expand old and find new markets at home and abroad. Without in any way underplaying this vital and expanding role of the private sector in research and development, it is clear that governments must play a leading role in the resource development process. This will require not only the expansion but the better co-ordination of government activities at the different levels. This expansion of the role of government is required because of our social and economic objectives of full employment and rapid and balanced economic growth. It is required because of problems of conflicting use which only governments can resolve. It is required because of problems of technical complexity, because of problems associated with attempts to gain economies of scale, because of problems of public or common ownership of many of our renewable resources. The purely technical problems of multi-purpose development may not prove too difficult, but as Pepler remarks, "the legal, jurisdictional, educational, social and psychological aspects may be formidable. In this situation time is not on our side; it is an ally of confusion."

#### *Research potential as a renewable resource*

To recapitulate, we have seen the need for policy research into problems associated with the creation of the right environment for rapid growth. We have seen the need for broadly based research, in the fields of both the natural and social sciences, into the problems and potentialities of the demand for and the supply of our renewable resources. We have looked in a general way at deficiencies in the scope of research programs in resource development. We must now look at our research potential itself as a renewable resource.

On the demand side, the competition for our limited research resources is so great, between the

different resource sectors and between the resource and industrial sectors as a whole, that the inefficient use or wastage of these resources is even less permissible and their multiple use even more important than in the case of our natural resources. Nor can we afford to continue to export these resources as we are now doing, because of failure to provide opportunities for their employment. I think this is one conclusion we can safely draw from the Background Papers and yesterday's sector workshop discussions. The demands, made or implied, for our research resources stretch, figuratively if not literally, into outer space. We badly need research into the nature of present and future demands for our research resources.

Although on the supply side our research resources are subject to expansion, they are not now, nor are they ever likely to be in excess supply. In the Background Papers, author after author complains of a shortage of adequately trained research personnel in Canada, of the lack of university facilities and instruction, particularly at the postgraduate level, and frequently of the lack of knowledge on the part of young students of the challenging careers available to them in research in the resource field. For this state of affairs our various levels of government, private industry and we as citizens must share responsibility. Last week the Minister of Finance, in speaking of the benefits of industrial research and pleading for the investment of more of the resources of industry in research, asserted that "today, not even including expenditures on research in defence industries, the Government of Canada is spending much more on industrial research than does industry itself." Surely there is something seriously wrong in our attitude to pure and applied research in Canada. Research into the causes and correction of this underdeveloped state of our research potential is clearly one of the most challenging problems which we as a nation face today.

#### **Discussant (Mr. CHANCEY)**

I would agree with Dr. Menzies' conclusion that our present state of research in practically all disciplines is inadequate for a progressive and forward-moving Canadian economy. There are sectors of our social and economic environment which have virtually been ignored and which are now becoming most important in the struggle to control and develop a resources-based economy. It is quite obvious that agricultural endeavor is not meeting with the economic success that those engaged in it desire and while I would not be dogmatic about it, I would say that the inadequacies are not alone those of the farmers.

On the other hand, I have some doubts about research designed to increase agricultural production simply to meet anticipated future demands for food



and fiber. We have reached the somewhat anomalous position in productive capacity which freely admits that we could probably produce three times our present tonnage if known technological procedures were adopted. We are also fast becoming aware of the fact that other areas are increasing agricultural production at a furious pace. Japan is now said to be able to produce its rice requirements and its farmers are protesting the importation of Canadian wheat. Europe, or the common market area, which should shortly include the U.K., aims to become agriculturally self-sufficient and Scandinavia cherishes the same goal. The production potential of continental Africa has not yet been tapped, and provided India can obtain sufficient irrigation waters, her agricultural production could well equal her requirements.

In view of the foregoing, it is suggested that a large segment of our research effort should be directed toward increasing the consumption of agricultural and renewable resources production in ways other than those which are purely traditional. It is felt that we should not be tied to an economy which dictates that if we do not eat or export our production we can only be faced with surplus. I think it is entirely feasible to convert agricultural and other products to commodities which the nation and the world will demand and it is felt that research emphasis in this direction could be most rewarding. Research should be designed to steadily increase our productive capacity but at the same time, equal emphasis should be placed on discovering new uses for this production.

A review of the Background Papers reveals that a lot of our research is conducted under circumstances which do not permit correlation within related disciplines. Soil surveys are completed without reference to forestry or land use requirements; inland fisheries research is conducted without reference to wildlife studies, and so on. Confusion exists in the chemical, physical and biological fields also, and even in a contained unit, unification of purpose in areas which could benefit from concerted efforts is not always present. We could benefit greatly by a more unified approach to research problems and it is perhaps time that we paid some attention to methods which are being employed quite successfully elsewhere.

It is true that we are woefully short of research personnel in many fields of endeavor and I sometimes wonder if some of this shortage is not due to our own laxity in research thinking. Normally, if we are faced with a shortage we immediately try to devise ways and means of subventing it. We apparently do not put the same effort into meeting the present shortage of research people. We shall soon seriously have to consider what might be termed

an incentive research training program so that our research requirements might be adequately met. Without trained research personnel in sufficient quantity we shall not be able to survive the technological onslaught which soon will be upon us, much less increase our productive capacity.

I have by no means covered the important deficiencies existing in the scope of present research programs but I hope that I have made a few suggestions which will stimulate discussion on the subject.

I feel that an adequate research program can contribute most toward the success of any future endeavor to promote the optimum utilization of our renewable resources. I also feel that only by the use of imaginative and intrepid research thinking can we guarantee our economic future.

#### **Discussant (Mr. GARIGUE) \***

On principle, I agree with the ideas put forward by Dr. Menzies on the research problem and I do not propose to waste time by agreeing at length. However, to his ideas I should like to add that the rate at which the control of natural forces by man is progressing depends nowadays more than ever on political decisions.

Therefore, the question which claims our attention is whether in the matter of the natural resources of Canada we are able to make any decisions likely to make such resources increasingly adequate for the future.

That question cannot be answered without raising the issues which must be resolved to make a valid decision from the standpoint of the use of resources. We can hardly separate, as Dr. Menzies has also pointed out, the technical development from the economic and social developments which are associated with it. Each of those is, to a certain extent, both the cause and the effect of the others; to discuss in the abstract the importance of one over the other would be of little help to us.

Consequently, the understanding of the changes necessary for more efficient use of resources involves the political, economic and social situation of Canada. There could be no single policy for the use of resources in a country as differentiated as ours. For example, a farm policy intended for Saskatchewan or Alberta must be basically different from a policy which is to be applied in Quebec.

We may also question whether a resources policy which does not take into account the cultural diversity in Canada may be technically valid. French Canada cannot be treated in the same way as British Columbia. Here lie a whole set of problems which should be studied by scientific investigators, in order

\*Translated from French

that it may be possible to work out a natural resources policy. It would be a mistake to believe that economic development of Canada may ignore social and cultural matters.

We ask these questions because the rate of investment in natural resources and the redistribution of the economic benefits from such investment, are not arbitrary matters unrelated to scientific research. I

take the liberty of reminding the members of the Workshop that any purely "technical" conception of research will not contribute to the general welfare of Canada, if such research is limited to improving production without studying the economic, social and cultural conditions underlying the structure of Canada.

## DISCUSSION

The Workshop divided into the following subgroups: agriculture, forestry, fisheries, recreation and wildlife, water, and urban development. After lunch a spokesman for each of the subgroups reported the views of his sector to the assembled Workshop.

### *Forestry*

1. With reference to the shortage of qualified technical personnel for government agencies and industry, to the fact that research is the key to improve our aptitude to compete by cost reduction and also to the need for increasing the variety and quality of forest products, there is a need for a vast system of university grants and postgraduate scholarships. University grants should, however, be limited to more fundamental research in the field of wood science, wood production and wood uses. Such university grants and scholarships could apply: (a) to science and engineering faculties for research connected with general knowledge of wood; (b) to forestry faculties for research in management, logging, silviculture, forest biology and operations research; and (c) to other faculties for original work on production, distribution, marketing, transportation, finance, labor, human relations, etc. Study should be given to means of co-ordinating such fundamental research by federal and provincial governments, industry and universities.

2. A Forest Industry Economic Advisory Committee should be established, adequately representing industry as well as government and university specialists, to explore those areas whereby co-operation could assist the industry in competing in world markets and to recommend those specific areas of economic study and research which would assist government and industry in the development of mutually effective short- and long-term policies for the forest industries and the economy.

3. It is recommended that both technological and economic research in forest harvesting now carried on by government and industry be greatly expanded

in scope as well as in amount, and that co-ordination be improved.

4. Where shortages of trained research personnel in certain areas are serious, changes in recruiting procedure should be initiated by government agencies to accelerate the rate of recruiting from outside Canada.

5. An effort should be made to raise the technological level in industry, so that the results of research may be more quickly and successfully applied.

### *Water*

1. Factors inhibiting sufficient and suitable research in water resource development problems may be summarized as follows:

- (a) Lack of basic data in some areas and of particular kinds, e.g. sediment loads of streams;
- (b) Lack of co-ordination in collecting basic data and in analysis and research among agencies concerned with measurement of the parameters of the hydrologic cycle;
- (c) Lack of communication of analysis undertaken by public and private agencies;
- (d) Insufficient numbers of trained personnel, students and research workers in water resource fields;
- (e) Insufficient funds for research.

2. Some fields of research deficiencies are:

- (a) Application of geophysical methods to ground-water investigations;
- (b) Weather modifications;
- (c) Evaporation suppression;
- (d) Regional water balance;
- (e) Physical and chemical limnology;
- (f) Ice;
- (g) Instrumentation for data collection in remote areas.

3. The water subgroup proposes:

- (a) Machinery should be established to ensure

- necessary co-ordination in data collection, analysis and research.
- (b) Encouragement should be given to publication of annotated bibliographies on aspects of water resources, similar to the one compiled for Canada in 1958 by the Subcommittee on Hydrology, National Research Council.
  - (c) A body should be established to advise appropriate government agencies on allocation of funds for water resources research.

#### *Urban growth as related to renewable resources*

1. The basic problem is the apparent irrational and inefficient use of land in urban-centered regions. One example is the sprawl pattern of urban growth which is inefficient and maladjusted to its regional setting. This basic problem seems to be due to:

- (a) The historic legal framework for jurisdiction and planning providing an inadequate structure of administration for the solution of regional land use problems resulting from urban growth.
- (b) Utilization of the price mechanism to determine land use patterns.

#### 2. Deficiencies in research include:

- (a) Lack of knowledge about the quantity, nature, quality, and precise location of the renewable resources in urban-centered regions, the rates at which they are being consumed, and the socio-economic processes involved in their consumption.
- (b) Lack of co-ordination of research activities of different individuals and groups.
- (c) Lack of analysis and interpretation of available information.

#### 3. The following solutions are proposed:

- (a) The co-ordination and acceleration of present federal, provincial, municipal, and private survey and research activities in order to gather as quickly as possible more information on the physical, socio-economic, cultural and political facts about land uses as affected by urban growth.
- (b) Greater use of existing government research agencies, facilities, and programs in attempting to remedy the above listed deficiencies.
- (c) The establishment of an appropriate national agency:
  - (i) To collect and to distribute the results of the various research activities of governments, universities, industries, research firms, and individuals;
  - (ii) To analyze and interpret information collected in order to formulate principles of land use;

- (iii) To stimulate research to help fill in the gaps;
  - (iv) To provide research funds to universities to carry out pure and applied social science research pertaining to urban land use problems.
- (d) The formulation of an educational program:
    - (i) To provide the public through appropriate media (e.g. schools, news outlets, films, public lectures, exhibitions, etc.) with more information about the problems of urban growth in relation to renewable resources; to suggest possible solutions; and to make known what legislation is applicable and what assistance is available for solving problems.
    - (ii) To encourage and to assist financially the training of research personnel, particularly in those social sciences which are concerned with land use problems.

#### *Wildlife and recreation*

Recreation and wildlife are the least known of the renewable resources. There is an urgent need to investigate the operation of supply and demand factors and their socio-economic applications.

Studies are needed to assess demand (domestic and foreign; current and projected) in terms of its dimensions, its location, its expression as a consumptive or non-consumptive use.

There is an urgent need to develop definitive economic analysis of the value of recreational resources, particularly in the interdependent fields of tourism and wildlife.

Supply factors, to be properly assessed and managed, require research into:

- (a) User motivation;
- (b) Trends in type of use, consumptive or non-consumptive;
- (c) The relation of accessibility, proximity to sources of demand, and service facilities for use of wildlife and other recreational resources;
- (d) Determination of criteria for and methods of evaluating the potential of lands for recreation on either single purpose or multi-purpose basis.

Supply and demand factors affecting the fur industry are particularly in need of research.

Development of secondary or peripheral sources of income from recreation and wildlife requires research.

The dimensions of wildlife and other resources which support recreation have received more attention than the socio-economic dimensions, but many gaps in our knowledge remain.



Research on wildlife is most meaningful when integrated with research directed toward other resources or land uses (forests, agriculture, water, etc.).

Another general consideration is that the planning of physical research must take account of the diversity of the Canadian environment.

Particular needs in physical research, which largely relate to supply may be categorized as follows:

- (a) Wildlife population assessment;
- (b) Factors affecting wildlife populations;
- (c) Problems arising from the use of biocides;
- (d) Self-contained population controls;
- (e) Planning for recreation and wildlife management will be gravely handicapped until a land use capability survey is completed;
- (f) Specific requirements in habitat utilization by wildlife species;
- (g) Wildlife diseases;
- (h) The dimensions of the wildlife harvest and the ways in which they can be modified.

Meeting these research needs will require a great improvement in the supply of personnel and facilities for research. We especially note the need for increased support for postgraduate training facilities in Canadian universities. We heartily subscribe to Dr. Menzies' views on this subject. There is a need to sell careers in the biological and social sciences.

Finally, we stress the importance of communicating the results of research both within and between the professional fields and to the general public. Action to improve these two types of communication must be taken soon. It will involve the development of professional standards in the information-education field.

### Fisheries

Fisheries research recommendations fall into two groups:

1. Economic, technological and sociological research on the following:

- (a) Factors affecting the demand for fish products;
- (b) Recreational fishing and its economic values;
- (c) The efficiency of fishing and marketing facilities;
- (d) Improvement of the quality of fishery products and the development of new products.

2. Biological research on the following:

- (a) Factors affecting sustained yields;
- (b) Reaction of fish to fishing gear;
- (c) Effects of change in environment;

- (d) Definitions of water quality standards for various species;
- (e) Propagation and reproduction;
- (f) Culture of sedentary species;
- (g) Inventories of usable fish.

### Agriculture

1. Requirements to correct deficiencies in resources inventory include:

- (a) Soil, present land use and simplified land use capability surveys and maps;
- (b) Collection and analysis of farm management data and information;
- (c) Organization of census information so that data needed for research can be readily extracted;
- (d) Aerial photography on a uniform scale;
- (e) Accelerated provision of base maps;
- (f) Provision of additional and more appropriate meteorological and climatological data.

2. Specific inadequacies in current research include:

- (a) Agricultural economics, with respect to:
  - (i) demand problems, dealing with outlook and potentialities for agricultural products;
  - (ii) marketing;
  - (iii) economic factors affecting the utilization of our supply of land and water;
  - (iv) problems of agricultural adjustment aiming at economically sound farm businesses;
  - (v) the adequacy of farm credit sources and financial arrangements.
- (b) Agricultural engineering, with respect to development of new equipment.
- (c) Plant and animal science, with respect to nutrition and management.
- (d) Extension, with respect to excessive delay in application of research findings.
- (e) Overspecialization in research has led to an excessively narrow interest, and hence lack of co-ordination.

### General discussion

The Chairman observed that there were several points held in common by the reporting disciplines. There should be an increase in grants to universities for research; there is a need for a great expansion in research of all kinds, especially in the social sciences; better co-ordination of research efforts and greatly improved methods of dissemination of knowledge are required; and land use mapping needs to be pushed vigorously.

Following a wide-ranging discussion, a number of conclusions were agreed to:

1. There is a need for increased research funds for both applied and basic research in all phases of resource development at national and regional levels. In making such funds available, it is essential that the specific needs of the socio-economic and natural sciences be considered separately.

2. The proper use of research funds depends on increased numbers of trained research workers. University staffs need to be strengthened and graduate training stimulated.

3. Funds for both the above should come from government departments and through organizations comparable to the National Research Council. They may be applied as grants to or contracts with universities and university personnel.

4. Industry should be encouraged to expand its research programs and integrate them with gov-

ernment and university programs where practical. The placing of government contracts with industrial and private organizations, for research in resource development, should be encouraged.

5. Integration is needed between the research activities of the socio-economic and natural scientists.

6. The co-ordination of statistical data having to do with resource development should be strengthened.

7. Accelerated land use, soil and land capability mapping should be undertaken on a national scale to provide needed information on renewable resources. In addition, broad reconnaissance soil and land use mapping should be undertaken in those areas which have received prior survey.

8. The atmosphere must be considered as a source from the viewpoint of meteorological research.

# Research Workshop B

WEDNESDAY, October 25

Are there important deficiencies in the way  
in which research activities are organized?

- Chairman: RENÉ POMERLEAU, Head, Forest Pathology Investigations, Forest Research Laboratory, Forest Entomology and Pathology Branch, Department of Forestry.
- Co-Chairman: H. F. LEWIS, Chairman, Nova Scotia Resources Council.
- Lead-Off Speaker: A. G. MCCALLA, Dean, Faculty of Graduate Studies, University of Alberta.
- Discussants: D. N. KENDALL, President, Hunting Survey Corporation Limited.  
J. L. ROBINSON, Professor, Department of Geography, University of British Columbia.
- Rapporteurs: G. P. BOUCHER, Economist, Economics Branch, Canada Department of Agriculture.  
E. B. RALPH, Director of Forestry, Newfoundland Department of Mines, Agriculture and Resources.

**Chairman (Mr. POMERLEAU)**

*(Summary)*

The attention of Research Workshop B was directed by the Chairman toward the various aspects of research in Canada in the field of renewable natural resources. The Workshop had been asked, he said, to determine if important deficiencies exist in the way research activities are organized. He continued: "We are all aware that extensive knowledge is necessary to use and develop the renewable resources of our country on a sound basis and to obtain the best sustained yield without destroying the productivity of the land. In Canada, our experience in the management of such resources is rather limited except, perhaps, in agriculture. Therefore, we must rely largely on information obtained by scientific methods to learn in a relatively short period, how to benefit from the wealth within our range. This implies also that an effective and productive research structure is an essential mechanism to our economy."

**Lead-Off Speaker (Mr. MCCALLA)**

"Are there important deficiencies in the way in which research activities are organized?"

Since the title assigned is a question, I shall start with an answer, and that answer can be only, "Yes."

This lead-off paper must emphasize agricultural research because this is the area I know best. Nevertheless, I believe that much of the material and many of the ideas will be pertinent to other areas, and other participants will undoubtedly fill these in.

In Canada, in the general field of renewable resources, we have research of some kind being carried on by the federal government, some (probably all) provincial governments, universities both public and private, and industry. Financial support for research, I would say, is predominantly from the federal government, varies widely from provincial governments and is, in my opinion, much too low from industry. Universities get their research support from governments, both federal and provincial, from private donors and from business and industry. Very little comes from endowments.

It is also clear, I believe, that business and industry interested in renewable resources give less support to research in general than do many other businesses and industries interested in other kinds of resources, particularly non-renewable resources such as minerals and fuels. Part of the reason is almost certainly the size of many of the enterprises interested in these resources, although this does not apply to some forest industries nor to some of the larger grain companies whose stake in the resources is high but whose total contribution to research is often quite low.



Organization of research involves:

- (a) Decisions to do particular things;
- (b) The purpose behind the research and the end sought;
- (c) Who does these particular things, where;
- (d) How the research is financed;
- (e) How it is planned and supervised;
- (f) How the results are made available to the interested public.

It is the responsibility of Research Workshop A to consider deficiencies in actual research projects and areas, but I suspect that we will have occasion to touch on these at times.

Research activities under federal government jurisdiction are organized through the National Research Council, the Defence Research Board, the Fisheries Research Board, Atomic Energy of Canada, and in various government departments such as Agriculture and Forestry. I shall come back later to discuss the general organization of research under two of these bodies.

Research activities normally falling under provincial jurisdiction may be done in laboratories operating directly under a provincial government; they may be referred to the provincial universities; or there may be a combination of approaches.

Some of the problems of organization stem from the fact that some research activities may be truly national in scope and application while others are regional (rarely truly provincial) and some quite local. The potato grower in Prince Edward Island can't be expected to get enthusiastic about wheat problems on the prairies or salmon problems on B.C.'s coast; but it is very difficult to delineate the boundaries between responsibility even if it were accepted that only really national problems were federal and others were provincial. As it is, this is not accepted. I think it more usual for a provincial research organization to shy away from what are considered to be problems that are more than provincial in scope, than it is for a federal government organization to shy away from regional problems.

Research in universities has quite a different set of problems. So far as I know only Ontario Agricultural College, of the universities, operates directly under an interested government department although there may be other examples. This gives universities a freedom in research that is not generally enjoyed by many other research organizations. They are (thus) less likely to be influenced by the local or national nature of a problem.

Industry may support research or it may do research itself. In Canada there is less industrial research than in many other countries. In general, however, the large industrial research programs nearly everywhere are in fields other than renewable

resources. When industry supports research at a university or at universities, it may use a number of different approaches. It may have a special problem for work on which money is supplied either as a grant or under contract. It may make grants for any problem within its range of interest or it may occasionally make grants or provide scholarships with few or no strings attached.

With all these interested groups and different kinds of research organizations it is no wonder that the organization of research may not be ideal. Some people worry a great deal over possible duplication and there is no doubt that there is some; but much worse, some part of the research that is carried on has already been done better elsewhere, perhaps even in Canada. I shall also come back to this question.

Organization of research therefore involves decisions as to whose responsibility a field of research or a specific project should be. There is sometimes difference of opinion or even jealousy displayed in such matters, often at the expense of nearly everybody concerned. It is important that there be understanding and co-operation among the agencies, if maximum returns are to be obtained. I have seen two examples of direct government agency intervention when industry—using the word rather broadly but correctly I think—has proposed to support research projects.

Some years ago, the turkey breeders of Alberta got together and proposed that they should assess themselves a small amount—a cent a bird, I believe,—the money to be deducted at marketing and turned over to the Poultry Division of the Faculty of Agriculture at our university for research on turkeys. In order to do this the mechanics had to be approved by the provincial Department of Agriculture. The Minister took the stand that if such research needed doing it should be done on government funds, and he refused the request of the breeders. I consider the decision to have been quite wrong. If small industry—in this case the producers—was prepared to finance research on its own product, this is the ideal arrangement and the government need not and should not have become involved except to give its approval.

A second, more serious example concerns a plan of grain handling firms to supply funds to the Universities of Manitoba, Saskatchewan and Alberta for basic research on wheat rust problems at the time when Strain 15B made the earlier resistant varieties susceptible. It is true that all the details had not been worked out, but the federal Department of Agriculture intervened—rust research had been their field for many years. This, I believe, led to the actual start of the Extramural Research Grants to the universities—a form of assistance that has not worked out exactly as the universities had expected. In the

meantime, industry—in this case the grain-handling firms—lost interest and the funds that might have been available were lost to research.

I detail these two cases because I consider both to be examples of poor organization. In both cases the interest of industry should have been welcomed by the government concerned and the added funds available would, in my opinion, have come from the proper source.

I say without reserve that the agricultural industry has done far too little for itself in supporting research. Probably the best organized agricultural research over a fairly long period has been the research that has formed the basis of the co-operative work under the auspices of three Associate Committees sponsored by the National Research Council but made up of representatives from all interested groups—Canada Department of Agriculture, National Research Council, universities, the Board of Grain Commissioners and industry. These committees were formed in the 1920's when rust threatened the wheat crop of Western Canada. They decided what research was needed, who should do it, to some extent how it should be financed, evaluated results and for many years made the recommendations that governed the licensing and grading of new varieties.

It is rarely remembered now that most of the funds used for the early work undertaken directly by members of the Grain Research Committee came from terminal elevator "overages." This fund proved so valuable that, when it was exhausted, N. R. C. assumed responsibility for supplying funds to the universities. The Grain Research Laboratory at Winnipeg, operated under the Department of Trade and Commerce (now Agriculture), grew from a small control laboratory to the foremost research organization of its kind in the world.

Thus funds resulting from industrial activities financed the early stages of this very important work on wheat quality. The type of co-operation among the agencies has changed over the years but there is no question that the funds available to this and the other committees were used efficiently and profitably. *But*, and I emphasize this, funds for these co-operative programs did not come from industry except by accident and were not really industrial funds at all. In fact very little financial assistance has come from the interested industries.

One exception must be made, and the exception is valuable as an example. This is the support that the Canadian brewing and malting industries have given to research in barley breeding, barley genetics and the study of barley quality. Support for this work has been continuous for nearly 20 years.

I believe strongly that industry should support agricultural research. If parts of the industry are too

small or too divided to do their own research—as the farming industry is—it should at least devise ways and means of supporting research either at research institutes or at universities. Twice before I have proposed how I think this could and should be done—both times before industrial and business men. I have been thanked but nobody asked a single question or made one comment regarding the suggestion.

So I shall try a third time.

A great deal of research could be done if all industries connected with agriculture would in some manner set aside some funds for research. If one-half of one per cent of the value of all cash sales of agricultural produce were earmarked for research, something of the order of \$12.5 million annually would be available. This could be managed by one or more research foundations that might or might not have research facilities themselves but in any case would get the necessary research done wherever it could be done best. I'm not going into details—in fact I have obviously not worked these out—but I'm convinced that we in Canada could set up an efficient system that would make the agricultural industry, including farmers, proud of its help to itself. Industry would, of necessity, have to adjust its apparent concept of agricultural research and support research in general rather than a little problem here and another there. I submit that this idea, or any reasonable modification of it, merits consideration. I think it belongs in the discussions of this Workshop.

In reading the Background Papers—at least those that appeared to be most useful for this paper—I was struck by the number and variety of writers who believe:

- (a) That much more research is needed;
- (b) That the federal government should pay for it.

Usually these comments are made in reference to specific projects, many of which are certainly not national in scope. Obviously a large increase in federal research funds would create additional organizational problems. This is especially true if it is assumed, as many writers do, that such federal funds will be spent on research done outside federal institutions. It is imperative that consideration be given to the problems that each kind of research organization faces and an attempt made to use research funds in the best possible way.

I said earlier that organization of research involves a consideration of the purposes for which research is done. We say that university research is done to advance the boundaries of knowledge; sometimes to solve specific practical problems; but always—or so I believe it should be considered—to provide the best possible advanced education and training for our graduate students. In this latter purpose the uni-



versity is unique in its responsibility and this is the area I referred to earlier as complicating organizational problems for a university. I can cite a definite example of what I mean. My own time is largely taken up with administration but I have my own lab and have had two Ph.D. students working on wheat protein studies. One of these graduated in May and returned to India. He left a problem with all preliminary work completed and material available, but I did not get a student to replace him so the project is in abeyance. I could use a good technician, but it is our responsibility to use such research projects and funds for educating advanced students, so I can only hope that the vacancy will soon be filled. On the face of it, this looks like poor organization. At the N.R.C. or a comparable laboratory this type of problem is largely avoided.

Universities usually have rather small amounts of money budgeted specifically for research, on the assumption that such funds can be obtained elsewhere—especially from federal government agencies or from industry. No university, I believe, can budget for adequate research funds and all must therefore be interested in the organization of research in other government institutions.

By contrast, if a provincial government wants to have research done it *can* budget money for this since it has taxing powers. It may not provide as much money as its research staff would like or could use but, in general, most of the problems faced by a university do not exist for a government. Furthermore, most of its research personnel will be full-time and if a project promises results it can usually be pursued.

Similarly federal government agencies can be supplied with necessary funds to do the research that the government considers warranted. Certainly this government does not look to outside sources for money and it sets its own tax rates. There are several different kinds of organizations within the federal research system, and I should like to compare the two that I know most about: the National Research Council and the Research Branch of the Canada Department of Agriculture.

1. The National Research Council is responsible to a Committee of the Privy Council consisting in 1960-61 of 10 Ministers; the Research Branch of the C.D.A. is responsible to the Minister of Agriculture.

2. The N.R.C. has an Advisory Council of 21 men, only four of whom are employed as executive heads of the Council. Fourteen of the Council members are from universities. The C.D.A. has no advisory committee or council.

3. N.R.C. operates large central laboratories and three (two main) regional labs; C.D.A. has 60 "research" units (if this term can be properly ap-

plied to some of the small units) scattered from British Columbia and the Northwest Territories to Newfoundland, with some large units at Ottawa and other locations.

4. N.R.C. makes large grants to research workers in universities and has a large scholarship program, and both programs are expanding; C.D.A. has made some grants to universities but the total amount is small and has been decreasing. It has no scholarship program.

There are undoubtedly other important differences including the fact that N.R.C. staff are not civil servants, but these will suffice for the moment.

The C.D.A. is much the older of the two bodies. It has done excellent work of enormous value to Canadian agriculture and much of this has been as a direct consequence of the research done in its own labs and on its own farms. The philosophy of those now charged with organizing the research in this department is quite different from that of the founders of the experimental farm system, and this is as it should be. It may be questioned, however, whether the changes that have taken place, even in the extensive reorganization of three years ago, have kept pace with the change in philosophy or in research needs and emphasis. It appears that it has been considered necessary, or expedient, to retain many of the features of the system that fit the old philosophy better than they do the new one.

One of these features is the large number of small isolated units. When research was largely applied experimentation, geared to a specific location, these units may have been entirely justified and some of this work probably must still be done. What is not justified, in my opinion, is the assumption made by some of the men at some of these small isolated units that they must cover the same spectrum of research as is done in a large unit. Regional stations are certainly necessary, but the small isolated station should be maintained only if some on-the-spot work *must* be done there and nowhere else. So far as possible I believe that such stations should be operated by technicians while the scientists work where there are scientific contact, facilities and library.

By its very nature, N.R.C. does not face these problems, but would have to if it included the responsibilities now assigned to the C.D.A. A greater degree of independence would enable this type of organization to develop a program with less direction from a department that has many responsibilities aside from research, and I believe that this would be advantageous.

I said that N.R.C. made large and increasing grants to universities. Those of us in agriculture share to some extent in these as do research workers in fisheries, wildlife, etc. Of necessity, however, much of



the research we wish to do is outside the areas strongly supported by N.R.C., particularly the survey type of research, or some kinds of field work involved in ecology of plants or animals. N.R.C. has concentrated on support of basic research rather than of the more applied aspects and has tried not to encroach on the fields of the other research organizations.

In the opinion of many people this has meant a poorer position for these types of research and certainly for financial assistance for such research outside government organizations. It has meant that universities have been unable to get adequate assistance for many such research projects. The C.D.A. and other departments cannot give the necessary support because they do not possess the authority to do so. And yet I am sure that, with adequate support, the universities could make a much more significant contribution to this kind of research. We could support more and better students and this in turn would improve the quality of the graduates we supply to other research organizations and to industry. And don't forget that the university is the one kind of research institution that can do the job of advanced education, although co-operation with other institutions could be closer and more useful than it is at present.

It seems to me that we need to take a hard look at the research picture in the whole field of renewable resources as opposed to those in the basic sciences, medicine and some areas of non-renewable resources. Are we, in fact, planning and managing our forests to the best advantage; have we adequate well-planned research in fisheries and agriculture; and have we enough really good research scientists to do the necessary work? I can speak with most assurance about agriculture but I suspect that this whole field of research is less well organized and supported than the others I mentioned.

Some years ago, the Research Committee of the Agricultural Institute of Canada proposed that an Agricultural Research Council should be organized to take over the research being done by and sponsored by the federal government. This report excited considerable discussion but little action. I discussed this idea with a few men in the C.D.A. before the recent reorganization and was assured that it was not feasible—politically impossible, in fact. I have recently discussed the idea again and find considerable disposition, at least outside of the C.D.A., to support such a proposal.

I have come to believe, however, that a wider approach is necessary. I therefore suggest that this Workshop consider the possible value of a Renewable Resources Research Council, organized on much the lines of N.R.C. but with its responsibilities in the fields of renewable resources. Unquestionably the

federal government will still have to do much research itself and the basic laboratories are already available, in many places and in several fields of work. Such a Council should be responsible to the government much as N.R.C. is; not to individual departments of the government. Research activities should be separated from the other functions of the Departments of Agriculture, Forestry, Fisheries, etc. An advisory council should be established and financial support should be available through scholarships and grants just as N.R.C. operates today.

This may appear to leave out the provincial aspects of research in these fields, but it is assumed that the provinces will do as much research on their own as they feel is needed. This is what they do now in relation to the kind of research done through N.R.C. I would suggest, however, that co-operation between the federal and provincial agencies could be obtained by having some type of intergovernmental organization for each research sector—agriculture, forestry, fisheries etc., that would operate much as the Associate Committees do today.

I want to add a paragraph as a result of the reference, first by the Chairman of this Conference and later by the Prime Minister, to a National Council for Renewable Resources. I do not think that this is the same thing as I am advocating—in fact I'm sure it is quite different. What I have called a Renewable Resources Research Council will be needed to complement, on the research and science side, the National Council and the Water and Land Conservation Board referred to by the government speakers.

An alternative would be to widen the scope of N.R.C., but it seems likely that this would not be as effective since it would not result in the concentrated interest in the areas.

This still leaves a whole area of research that involves what is politely termed "political implications." It is clear that much of the research that needs to be done is in this category.

Take research in agricultural economics. It is certain that once we get away from production problems, nearly every research project in this field has political overtones. I attended the annual meeting of the Canadian Agricultural Economics Society at Vancouver a few years ago and was depressed at the reluctance shown to tackling these problems. Some of the problems are considered to be so directly related to government policy that their prosecution without interference is a "political impossibility," and nobody wants to touch them. Add to this that many agricultural economists are employed by the federal government, and you realize that we have an organizational problem of great dimensions. Research workers in this field should be given a much freer rein than most of them seem to feel that they

have had. This certainly means less immediately direct control by government.

Some type of institute or foundation with generous support should meet the needs in this field and I know that such an organization has been proposed by the economists themselves. It seems to me that governments would be best advised to encourage—indeed insist on—the carrying out of this kind of research and the publication of findings and recommendations. The results might be much more reliable than those obtained by Royal Commissions. If the government did not care to act on the findings, then the public would know that the reasons were political—a most desirable result from every point of view except possibly that of the government and let me hasten to add that there may be perfectly sound political reasons for failing to act on research advice. I ask that such reasons be admitted to be what they are. I am quite serious in saying that governments should be big enough, and wise enough, to act on the results of properly organized research or explain why they do not.

Another area of research where there are political overtones concerns the long-term planning of production. This is certainly true in agriculture and may well be true in forestry, fisheries, etc. It will certainly be true with respect to the orderly development of the north.

And here I must add another paragraph as a result of addresses and discussions already heard this week. On Monday the Hon. Walter Dinsdale, Dr. Pagé, Dr. Wilson, Dr. Grace and others referred to the need for increased education in connection with resource growth and development. I have already stressed that the education these people talked about is the responsibility of the universities. Unless the universities of Canada are adequately assisted by all who are concerned about education, they will be unable to do the job you say they must do or to fulfill the expectations of the people behind this Conference.

The basic gist of this paper is that research will be better done, in my opinion, if it is organized outside the direct control and supervision of individual government departments, whether federal or provincial. Provincial research councils exist in some provinces, usually in close association with a university. There are some good federal laboratories on university campuses and a closer liaison between these laboratories and the universities would be beneficial to both if properly organized. I think many small units should be closed or at least not considered to be doing research in the same terms as are the big units. I recognize that much of the work with fish must be done where there are fish, and wildlife work where there is wildlife, but the number of research units that can be adequately

equipped with the necessary tools and libraries is limited. It should therefore be kept to a minimum. Almost certainly the pooling of resources would often improve facilities and cut costs. All of the agencies interested in the field of renewable resources should reassess their research programs, seek closer co-operation with other agencies and make every effort to improve the organization of research in these very important fields. But this Workshop should look at some more drastic types of reorganization.

#### Discussant (Mr. KENDALL)

##### (Summary)

This discussant felt that the collection of data, and surveys, should also be considered research. He felt that on a national basis soil surveys were required, the forest inventory was incomplete, water surveys were inadequate, and that hardly any information exists on the problem of land use. He went on to state that in financing research Canada is lagging behind both the United States and the United Kingdom.

#### Financing of research based on gross national product 1959

	Canada	U.S.	U.K.
	\$million		
Financed by government.....	\$154	\$580	\$490
Financed by industry.....	78	290	220
Financed by government within industry.....	19	390	210

Mr. Kendall expressed the belief that the total expenditures on research in Canada are inadequate, far too little being spent in industry by comparison with the amounts spent in government. He also agreed with the formation of a new national resources research council responsible for basic and applied research, and the granting of research funds to universities. Mr. Kendall did not have an unduly large council in mind. In trying to determine what should be the policy of the council he said:

- That the bulk of basic research ought to be carried on in universities;
- That the council itself might very well do only basic research;
- That the council should farm out to industry as much applied research as possible.

#### Discussant (Mr. ROBINSON)

In preparation for my part in this discussion group, I read the abstracts on research, which were



prepared for us by the Secretariat, to see what had been said about deficiencies in research organization. The answer, I regret to say, is very little.

I made a check-list, for my own benefit, of the major research deficiencies which each of the pertinent Background Papers referred to. You may be interested in that summary. All six resource sectors stressed the lack of basic inventory data—they do not have enough information about their particular resource. Four of the resource fields stressed their lack of well-trained staff and/or sufficient funds, and four of the fields emphasized the need for research in interrelated fields to assist their own understanding. Three times each there appeared a plea for research on management techniques, research on marketing problems and quality control, and for detailed land use studies as tools for research. Only two resource groups called for research into the human problems in the utilization of the resource.

These are all problems of research which are being dealt with in Workshop A, and I catalogue them here only to indicate that there is some agreement as to what types of research deficiencies there are, but there are few examples of how we may organize our research to overcome these difficulties. The recreation paper called for a national agency for recreation research, perhaps under the Parks Branch. The water paper suggested a regional agency (like T.V.A.) to lead research and prepare plans. As a geographer I noted that this appeared to be the only regional suggestion. The most specific suggestion came from the wildlife group which asked for an *ad hoc*, voluntary research organization, which would not, however, be statutory. Their paper stated that the country is too large to entrust its research to one organization (this would appear to be contrary to Dean McCalla's suggestion of a national research body), and particularly they said that it should be non-statutory because resource control is a provincial responsibility. It was stated that research organizations would operate better if they were independent of government, but recognized that at present there were not suitable means of financing such an organization.

The most pertinent comments on research organization were made by Dr. Lloyd in his paper on northern research, and I commend its reading to all of you. I will not repeat his remarks except to say that many of his points are valid in our discussion today. His paper comments on the difficulty of attaining co-operation among government departments concerned with northern research, and of the difficulty of setting up a *supra* research organization over other established government departments. He also calls attention to the excellent work of the Arctic Institute of North America as an example of a private organization which is interested in sponsoring

research in many fields, compiling information concerning research, and publishing the results of research. This is a good example of a regional research organization.

The preceding, therefore, is to my knowledge, what the Background Papers have given to us on our topic of deficiencies in research organization. It remains for me, now, to make some additional personal comments on our topic, to open up some other avenues of discussion.

1. I remarked earlier that one of the deficiencies noted by several was a need for research in inter-related fields. Those who had experience with the B.C. Natural Resources Conferences knew that it is important that foresters, fisheries experts and power people do not discuss only their own problems, but that they must be brought together to argue out their relatedness. This Conference also recognizes this need by the manner in which the discussion groups are cross-fertilized with persons from many fields. It is apparent that all resource fields have their own research units, varying greatly in size and number. There could be unlimited discussion of how each of these research organizations could be improved or reorganized, but I believe that in this cross-section group our time will be better spent if we can discuss the possibilities and type of organization which can deal with interdisciplinary research. Thus, we can spend some valuable time on some specific suggestions concerning the format of Prime Minister Diefenbaker's proposed Resources Council. I would hope that it would be more than another advisory group, and that it could be a Resources Research Council, as Dean McCalla suggested, which in particular would emphasize interdisciplinary research.

2. One of the topics which you will be asked to discuss today is duplication of research. There is no question but that there is duplication, and that some of it is good and some is bad. Duplication of research may be useful at universities, where different views on the same topic may be stimulating, and where there are usually means on the campus for researchers to get together to compare notes; but duplication of research in the government is expensive and is often wasted effort. Government departments are frequently separated from one another physically, and as research empires are built up, there appears to be less willingness to pass on problems, on which one's job depends, to some other organization to solve. For these reasons, I am guessing that Dean McCalla's Resources Research Council will find favor with university people, but will not be liked by government employees. Whatever we call this organization we certainly lack some *supra* body which can be aware of all the various types of research now being carried out by the resources personnel in the governments and universities. Perhaps the first step



toward a Resources Research Council is the creation of a separate entity which would be informational—the collecting and distributing of information concerning research in all renewable resources. I would hope that such a body would ultimately give leadership to research rather than remaining as a service to research.

3. It has been noted before that many research problems are regional in scope rather than national or provincial—and yet we have no regional research organizations. I use the term *regional* in the geographers' sense of an area in which there is integration and conflict in resource use. Most of our occupations—what we do for a living—are fundamentally dependent, either directly or indirectly, on natural resources, and frequently on local ones of the region. The organizations which we now have to deal with these interrelated problems are regional planning boards—and they are few in number in Canada. It is regrettable that most planning boards are kept too busy simply trying to correct past mistakes, through zoning and other “channelling” activity, to carry out much fundamental research on how a region and its interrelated resources operate. Too often these organizations have to make decisions without the basic knowledge as to what the direct or indirect effect of this decision will have on their region. We need a research organization dealing with regional planning and I am pleased to hear that such an organization, separate from the government, is now being formulated in Ottawa.

4. I want to call attention to a particular research organization, which is carrying out some of the interrelated research problems to which I have been referring; this is the federal Geographical Branch in Ottawa. Geographers are trained to deal with interrelated environmental features within a region and must study overlapping and conflicting resource uses in attempting to understand the character of a region. There are many ecological, resource-based

conservational problems in which properly trained geographers in the Geographical Branch could give leadership in research. You will recall that several resources fields called for an intensification of land use studies as fundamental tools for their research. You are no doubt aware, from the maps on display in several conference rooms, that the Geographical Branch has been carrying out such detailed land use studies for several years, and that the maps are now being published. These maps are not simply agricultural land use maps, but are a basic inventory of what we have on the earth's surface, and are part of the inventory which all research fields were asking for. My point is, therefore, that one means of overcoming some of our deficiencies is to strengthen an organization which we already have and which could deal with interrelated resource problems.

5. Throughout the week you have heard, and will hear, the statement, *ad nauseum* that “people are our most valuable resource.” I suspect that most of you give lip-service to this motto—for you really cannot honestly deny that the main reason for research in, or utilization of, our resources is for the benefit of mankind, particularly ourselves. But, I suspect that you really do not believe this “social science” propaganda; “keep people out of this and let us get on with basic pure research!” We cannot keep people out of this, if for no other reason than “they”—that is you and I—are paying for it. We badly need an organization for human research—we need research into the implications of what we geographers call man-land relationships—using land in the broad sense of the natural environment in which we live. We need to understand man's attitudes, principles and concepts as to how he has used, and is using, his natural resources. Man has been using his local natural resources to support himself and family throughout our known history, but do we really understand how he does it?

## DISCUSSION

Concerning the organization of fisheries and wildlife research in Canada Dr. J. R. Dymond said:

“In my analysis of the situation with respect to the organization of fisheries and wildlife research in Canada, I found that lack of means for discussion of research needs by all those concerned was perhaps the most serious organizational deficiency. The agencies involved include not only the federal and provincial governments but many universities.

“There is need for some sort of organization by means of which representatives of the various

agencies concerned are brought together for the threefold purpose of: (a) learning of research in progress; (b) exchanging information on the results of research; and (c) discussion of research needs and of means of having needed research carried out.

“It is important that decision be reached as to relative roles of the federal and provincial governments and that co-ordination of the work of all agencies concerned be sought to avoid undesirable duplication and to assure that no important and

urgent research is neglected. Exchange of information between universities and government agencies is also very valuable.

"I intend to suggest that the organization to secure this co-ordination and co-operation in research be an unofficial, voluntary one. I believe this to be desirable to avoid the possibility of the federal government appearing to dominate and control research, as might happen if the government organized and directed the discussion."

Dr. Dymond then moved the following resolution:

"Whereas there are lacking adequate means for securing regular and thorough discussion of fisheries and wildlife research in progress, of results being achieved and of needed research not being undertaken; and

Whereas such regular thorough discussion of research is necessary in the interest of economy and efficiency in its conduct;

Therefore be it resolved that this "Resources for Tomorrow" Conference suggest that those concerned in fisheries and wildlife research, including federal and provincial government agencies and universities take steps to create means for the regular and thorough exchange of information and discussion of such research with the object of bringing about economy and efficiency in the conduct of such research."

Dr. Dymond mentioned the four organizations involved in forest research and with reference to participation by industry noted that member companies of the Pulp and Paper Institute contributed on the basis of annual pulpwood production toward the financing of forest research. Rather than approve the suggestion of centralization, a representative of the forestry sector felt that research establishments could not be realized in so far as forest research was concerned and also stated that in his opinion the greatest deficiency in Canadian forest research is the lack of trained personnel.

## Resolutions

After extended discussion, the following resolutions were adopted:

1. This Workshop considers that research in the fields of renewable resources would profit from reorganization that will provide for:

- (a) More adequate basic research, especially in universities and for the education of graduate students;
- (b) More adequate opportunity for co-operation in interdisciplinary research;
- (c) More adequate co-operation and co-ordination of research in individual sectors by means of regular meetings and discussions;
- (d) More adequate provision for the prosecution of any research that is required in the use of resources for tomorrow.

2. It seems possible that these aims could be best attained by the following:

- (a) The establishment of a Renewable Resources Research Council along the lines of the National Research Council but modified to take account of the different nature of the research in these areas and of the research agencies already in these fields;
- (b) The systematic establishment of co-ordinating groups for each sector that would include all agencies concerned with research in that sector.

3. Whereas the limited participation of industry in resource research suggests the desirability of exploring ways and means whereby such participation in research by industry may be increased, therefore it is resolved that consideration be given to provide funds for grants to selected industries in the areas of applied research and development, and further it is suggested that a scheme such as that used by the National Research Council for giving funds to universities be considered in this connection.





# JURISDICTION

Wednesday, October 25, 1961

"No amount of tinkering with the *British North America Act*, and no administrative contrivances will be of much use without the creative ingredient of what I call simply "political will." I am aware that politics must be practical. . . . and I am far from postulating a *deus ex machina*—a spirit of co-operation which in some mysterious way will solve all our problems. I well know that we have sectional and regional differences that are bound to condition our approach to all things political, including resource development. But the main question for the future is: notwithstanding these differences, are we sufficiently mature in a political sense to adopt a more reasonable strategy regarding the management of our renewable resources?"

*Prof. Hugh J. Whalen, Discussant, Administrative Jurisdictional Factors Conditioning Growth, "Resources for Tomorrow" Conference, Monday, October 23.*



# *Jurisdiction Workshop*

WEDNESDAY, October 25

To determine the degree to which the B.N.A.  
Act in fact limits resource development.  
The reduction of jurisdictional uncertainties  
to facilitate improved resource development.

- Chairman: JAMES SINCLAIR, President, Fisheries Association of British Columbia.
- Co-Chairman: J. G. COWAN, Deputy Minister, Manitoba Department of Mines and Natural Resources.
- Lead-off Speaker: F. R. SCOTT, Dean of Law, McGill University.
- Discussants: LOUIS-PHILIPPE PIGEON, Legal Advisor, Province of Quebec.  
C. B. BOURNE, Professor of Law, University of British Columbia.  
E. R. OLSON, Advisory Counsel, Canada Department of Justice.
- Rapporteurs: J. BEETZ, Professor, Faculty of Law, University of Montreal.  
J. S. HODGSON, Assistant Secretary to the Cabinet, Privy Council Office, Ottawa.

## *(Summary)*

By agreement among members of the leadership group, discussion of the jurisdiction questions posed for this Workshop was completely informal, with no prepared presentations. The following summarizes the consensus of the group.

In all seven resource sectors, jurisdiction is to some extent divided as between the federal and the provincial governments. The basic principle is that the provinces own and manage the public lands and have exclusive jurisdiction in matters of property and civil rights and in matters concerning municipal institutions. On the other hand, numerous powers of the federal government have an important impact on resource development. The federal government has jurisdiction, for example, concerning Indian lands, navigation, fisheries, the regulation of trade and commerce, treaties, interprovincial works and undertakings, research, and aeronautics. There is concurrent jurisdiction on subjects such as agriculture and irrigation. In addition the federal government may affect development through the taxation power, the spending power, the power to declare a work to be for the general advantage of Canada, and its general responsibility for peace, order and good government. The Northwest Territories and Yukon are under the

jurisdiction of the federal government and the territorial councils. In application, the general powers of the federal government may prove wider than is generally assumed. It was however pointed out that the availability of funds does not of itself confer jurisdiction.

Seacoast and inland fisheries are federal responsibilities, but the provinces have jurisdiction on proprietary matters, and the fish when caught become matters of provincial concern except when interprovincial or international trade is involved.

A federal system demands a high degree of co-operation between governments. When all governments concerned are in agreement on a course of action, legal difficulties have rarely been a cause of major delays. The various Background Papers support this general conclusion.

Various interprovincial bodies, such as the Prairie Provinces Water Board, have successfully performed in matters of concern to several provinces. Such arrangements however are "gentlemen's agreements" from which any participant may withdraw at its own option.

The legal impossibility of establishing a National Products Marketing Board and, the absence of uni-



fied jurisdiction respecting interprovincial rivers, are cases in which an optimum pace of development may have been inhibited.

Development projects commonly involve several jurisdictions and several resources. A dam, for example, has implications in terms of power, navigation, fisheries, agriculture, wildlife and recreation, and may have interprovincial or intersectional aspects. Such projects should therefore be planned jointly from the beginning, to achieve the optimum development.

Governments are so large, and so pervasive in their activities, that special measures should be taken to help the general public find its way when seeking solutions to particular problems.

Jurisdictional problems are likely to become more critical as development proceeds and scarcities arise. Therefore this Workshop recommends that a federal-provincial committee or some other entity be established to give continuing attention to the study of problems of jurisdiction in the field of natural resources.

# *ADMINISTRATION*

Wednesday, October 25, 1961

"In formulating and administering natural resources programs designed to contribute the most to economic growth and development, how can there be the best reconciliation and co-ordination between particular and semi-autonomous activities and agencies on any one level—and between these operating units, function by function, between levels—so that all these multiple functions and agencies and particular purposes may play their parts in a comprehensive and cumulative contribution to national economic growth?"

*Dr. John M. Gaus, Lead-off Speaker, Administration Workshop A.*

# *Introduction*

The two Workshops on Administration were nominally concerned with different problems—Administration A with co-ordination, and Administration B with long-term planning. In the discussions, however, it became apparent that these two subjects are closely interrelated. One of the principal objects of improved co-ordination is to provide for more effective planning of policy and operations to reflect commodity, functional and regional realities. Workshop B, in turn, saw improved co-ordination between and within governments as one important requirement for improved long-term planning.

Both Workshops concluded that there would be merit in some form of National Resources Council with advisory functions and a permanent secretariat.

Such a council, supported by both federal and provincial governments, is desirable to give a national—as opposed to regional—focus to resources planning. Workshop B suggested that one of its first duties should be to study the need for a National Development Fund.

Both Workshops also recognized that there is still a great deal of room for improved co-ordination and planning procedures within individual governments. Experience has been gained in some jurisdictions which might be of wider application, but each government must develop measures appropriate to its own structure and requirements. This requires continuing efforts, as economic and social conditions change over time.



# *Administration Workshop A*

WEDNESDAY, October 25

How do we improve interdepartmental co-operation  
for more effective resource management?

- Chairman: R. M. PUTNAM, Deputy Minister, Alberta Department of Agriculture.
- Co-Chairmen: M. J. FITZGERALD, Director of Administration, P.F.R.A.  
D. W. BARTLETT, Executive Officer, Canada Department of Northern Affairs and National Resources.
- Lead-Off Speaker: JOHN M. GAUS, Professor of Government, Emeritus, Harvard University.
- Discussants: G. E. GATHERCOLE, Deputy Minister, Ontario Department of Economics.  
W. G. BOLSTAD, Administrative Analyst, Saskatchewan Treasury Department.
- Rapporteurs: H. F. CROWN, Executive Assistant to the Minister, Ontario Department of Commerce and Development.  
ALPHONSE RIVERIN, Director, Economic and Scientific Research Bureau, Quebec Department of Trade and Commerce.  
F. J. THORPE, Administrative Officer, Canada Department of Northern Affairs and National Resources.

On the Chairman's suggestion, the Workshop agreed that the discussion would be limited by the following assumptions:

- (1) Canadian resource administrators will continue to operate under a federal system.
- (2) There is a general disposition toward inter-governmental and interdepartmental co-operation.
- (3) Co-operation should extend over all fields of resource administration.

## **Lead-off Speaker (Mr. GAUS)**

Document 2 of the Conference states that "The multiple use of resources to support an adequate rate of growth in the Canadian economy will be the main focus of discussion." A communication from the Office of the Secretariat dated August 21 states that "The emphasis will be on improved use of resources; use so planned as to satisfy the increasing needs of the rising generation and ensure the welfare of generations yet unborn. . . The obstacles to full resource use are more than technical ones. There are legal and administrative problems. . . ." These

warnings are useful. The high quality and great interest of the Background Papers are a great temptation to explore the substantive fields covered, and wander from "the meager, stale, forbidding ways of custom, law and statute." Tennyson might have added, as an extreme case, administration. This temptation is offset, for this student of administration, by another feature of the Background Papers and communications. This is the weight given to the use of natural resources in the growth and development of the national economy, in a society increasingly technically and economically interdependent, with a rapidly growing population which is more and more urban.

There are reflections of these changing conditions in the changing administrative process and its setting in the larger structures and processes of public and private government. Relevant to our workshop topic and discussions are:

- (a) The widened delegated and discretionary powers affecting policy and operations, left to administrative personnel: and
- (b) Their consequent increased responsibilities in

the formulation of policy through recommendations to the next higher authority in the line of decision, and through directives, interpretations, and instructions, within powers delegated to them, to the next lower authority in the two-way flow of department business.

The implications of these developments are the more important with the widened use of government as an instrument of counter-coercion against the coercions that may be resented by citizens, whether catastrophes such as wars, depressions, pests, and floods, or population shifts or new knowledge. We are all more dependent on such decisions, and the structure and processes of government by which they are effected.

The Background Papers present, directly or by implication, a system of government activities and agencies in natural resources which is:

- multi-functional (a program may require the integration of several functional agencies);
- multi-level (international, national, provincial, local, with various “regional” units interrelating some of these levels functionally in the “region”);
- multi-area or jurisdiction (since some function or activity of a unit may need complementary attention across the border with others, as illustrated by the papers on urban or river valley problems).

In a federal system, the allocation of functions and powers between the national and the constituent units may not be changed unilaterally but requires a special process of both, although judicial or even legislative and executive interpretations may provide adjustments. But with time and technological and other changes, the legal units and levels may no longer have areas over which they have jurisdiction appropriate, relevant and adequate to the public programs pressed upon them by the new conditions. This is probably the observation concerning the structure of government most frequently made in the Background Papers. But it should be pointed out that the difficulty of amending the constitution of a federal state was precisely one of major virtue to those who, in founding it, sought to preserve a compromise that made the new political system possible. The practical point for us now is that the programs needed across areas wider than a single jurisdiction must be won by consent, through a process of negotiation. Here again the administrative personnel have enhanced responsibilities. But before we enter upon these complexities among levels and areas and jurisdictions, let us clarify the policy formulation process in any one level or jurisdiction.

#### *The line of strategic points of decision making*

The process of government, and governments themselves, have ecological roots in the changes in physical

and social conditions affecting people, coercing them, and stimulating the thought that “there ought to be a law.” But what kind of law, and how should it be applied to varied conditions? The first decision, a very general one, is by the electorate voting a “yes” or “no,” or for “ins” versus “outs.” The representative legislature is the next major point of decision, in formulating and enacting a law which refines the general current and tendency of opinion among the electorate into a more concrete statement of aims and means. Somewhere, intermingling between and within electorate and legislature, are party institutions which may provide some further decision-making through platforms and programs, eventually to be reflected in the legislation.

The law however, in Burke’s phrase, “reaches but a little way,” in Emerson’s words, it “is but a memorandum.” Its terms get concrete meaning through a series of decisions made at strategic points of executive responsibility. These include the chief political executive, the political or career head or heads of the departments to which it is assigned by statute or executive order for enforcement, and thence down the operating line through bureau chief, regional officer and the individual civil servant to the citizen-clients to which it is applicable.

But here there begins a reverse flow of policy formulation through appraisal, criticism and suggestion based on experience with the policy and its administration, a flow that will lead back to the origin—the electorate. (“That law needs some changes.”) How informed and adequate is the appraisal at the various points, and indeed how informed and adequate was the original formulation of policy at these points?

The concern for informed and adequate judgments—the recognized need for them—leads to the provision for, and evolution of, technical and general staff aids to the operator-deciders. Illustrative of such aids are legal counsel, legislative reference libraries and drafting staffs, secretariats, research staffs, experiment stations, and program and planning staffs. With the increasing complexity of intergovernmental relations, we find for example the invention of departments of local affairs, to perform staff work for both provincial and local units of government, or the introduction of liaison officers in a department which has continuous or frequent sharing in policy and administration with its functional counterpart on another level. You will recall examples in many of the Background Papers of such staff relations by function across areas, levels and jurisdictions.

The provisions for a joint planning and policy formulating council with staff aids create what my friend Ayers Brinser might call a “planning unit” in contrast to an “operating unit” with powers of action. Such a planning unit supplements the member oper-

ating units. Arrangements like this—for example in a watershed or metropolitan region—may be the most effective way to deal with the earlier manifestations of technological, population and economic changes that seem to require public policy to be focused on an area more relevant to the problems to be resolved—for example areas suitable for potable water supplies, or recreational land uses.

### *Multi-government relations*

#### *The general setting*

The line of strategic points of decision-making sketched above for a single function is unnaturally simplified in this presentation, and already there is indicated the necessity of relating a function and its department on one level or in one jurisdiction with its counterpart on another level or in another jurisdiction, vertically or horizontally. But the Background Papers stress the organic substantive inter-relatedness of natural resources activities, for example in land use (agriculture, forestry, wildlife management, residence), or in the uses of water (domestic supply, transportation, power). Even if these governmental activities are grouped within a single comprehensive department, there will still remain intradepartmental co-ordination of bureaus to be achieved. And there will remain the co-ordination of public policies with those of the individual owner-operators or firms who are the ultimate decision-makers in the application of policy to their land or water enterprises—farms, power companies, paper companies, developers of real estate in metropolitan areas and many others. We may also find that particular activities and agencies and groups will have important policy relations with agencies and functions outside the category of “natural resources” as normally understood, such as transportation or banking.

We are dealing here with a problem present generally in government. Every state in the world is wrestling with the puzzle of relating functions and levels and jurisdictions, and of developing structures and procedures through which all the sources of knowledge, power and skill may be brought to the strategic points of policymaking.

The recognition of problems of intergovernmental relations and their diagnosis have particular importance for us in this Workshop because of the changing attitudes toward natural resources reflected in the calling of the Conference and the documents and statements which have been circulated. These represent a shift of emphasis from the substantive, technical and conservational (in the sense of protection and withholding) aspects of national resources, or from debates over ownership of them, to their wisest utilization in economic growth and development. It

is pointed out—and rightly—in various Conference papers, that this is no abrupt break, that elements in the current evolving attitudes were present in earlier movements and policies, and that technical and substantive and stewardship aspects continue to be of fundamental importance—indeed are enhanced. But the emphasis on “the multiple use of resources to support an adequate rate of growth” places a greater responsibility on agencies and personnel in this sector, who participate in the formulation of the most important and urgent national policies and in their application, on the basis of this newer orientation, down to the management of lands and waters throughout the nation. On the line of strategic points in decision-making, these great policy questions, with their involved constitutional issues, have by tradition been primarily the responsibility of electorate, interest group and party, legislature, and political executive—and indeed, of the judiciary at times.

Another feature of the Conference to be noted is the recognition of the urban and metropolitan areas, where an increasing proportion of the rapidly growing population of the nation lives and works. The relation of these areas to the use of natural resources has been discussed in several of the Background Papers. The emphasis on comprehensive economic policy and on urban areas raises questions for our discussion, not only in terms of structure and process, but also of the recruitment, classification, education and training of personnel who will be called upon to integrate what Sir Charles Snow has called “the two cultures.”

The same shift and developments in emphasis in the approach to natural resources have perhaps some implication for our consideration of a point touched upon in more than one of the Background Papers; that is, how to inform the citizens concerning natural resources problems and opportunities, both in terms of substantive fields and of the place of resources in national economic development. Or must we conclude that these matters are so complex that one must expect a widening gulf between the agents of the public and the public itself—a gulf which one can only hope will be sufficiently bridged by the political leadership? We are all familiar with the educational work, including extension services, which is directed primarily to substantive questions relating to a particular field—agricultural commodities, wildlife, or recreational facilities of a region, for example. This will presumably now be augmented increasingly by materials flowing from economic and social policy researches and staffs, on the questions of allocating always-scarce resources to always-hungry and competing services. Even in the wisest of multiple purpose households there are legitimately conflicting claims. Sometimes only one purpose can really be achieved satisfactorily. We must expect at best many



*ad hoc* and partial solutions, which will be further battered by unceasing change in environment and society. Perhaps this, too, must be conveyed to citizens. And immediate expectations must be reconciled with long-time factors of natural or economic growth in natural resources policy.

#### *Multi-government relationship*

##### *Tendencies and appraisals outlined in the Background Papers*

The general problem in the improvement of inter-departmental co-operation, to which several of the contributors of papers give attention—and some give priority attention—may be stated thus:

In formulating and administering natural resources programs designed to contribute the most to economic growth and development, how can there be the best reconciliation and co-ordination between particular and semi-autonomous activities and agencies on any one level—and between these operating units, function by function, between levels—so that all these multiple functions and agencies and particular purposes may play their parts in a comprehensive and cumulative contribution to national economic growth?

"To think about anything is to elevate it," wrote Emerson. And one may rightly feel that one early success of those who initiated and planned this Conference is the thinking which has gone into the Background Papers. Some of the results of the search by the authors for administrative response to the problems outlined above are here briefly summarized.

There is frequent stress upon existing multiple use programs and agencies both for planning and for operations. Some of these are the product of catastrophic events, such as the depression and the droughts in the 'thirties, in which the impact was particularly severe upon particular commodities and particular regions. Reflecting this, more than one level of government had to participate in the resulting efforts to counter-coerce the harmful physical and economic forces. The Prairie Farm Rehabilitation program is illustrative. Some are the product of more evolutionary change, such as growth and redistribution of population in urban regions, to which one response is illustrated by the development of a new metropolitan region and government at Toronto. Some reflect both the catastrophic and the evolutionary forces, as in the provincial-local programs in Saskatchewan, and comparable developments recorded in the sections on regional development.

Some writers note that while the multiple factor regional agency may achieve or move toward more comprehensive natural resources policy for a given area or commodity, it may also create further problems of co-ordination between the commodity or re-

gion and national programs aimed at national or international markets. And it is not easy to reconcile a national substantive agency emphasis with a complex regional situation, and the needs, for example, of financing local school and other services while waiting for the ultimate benefits of adjustments in land use which indeed, may result in a reduction in population that affects business and revenues locally. But a clear impression is conveyed, albeit with some reservations, of a consensus favorable to a further development of multiple function agencies for metropolitan and river or drainage basin areas as a partial solution, at least, for the area-function problem.

There is fairly general agreement that all three traditional levels of government must be involved in comprehensive natural resource policy, both for constitutional reasons (some view the province as "in the center" in constitutional responsibility), and for relating national policy to regional and local conditions. Recognition is given by some to the point of decisions and operations, the operating unit, where decisions are ultimately made or adapted; this means the great body of individuals, corporations, and the local, provincial and national government-owners of lands and water enterprises. For the provincial governments and the national government, more comprehensive departments are sometimes suggested and, more frequently, some kind of natural resources council.

It is clear from the Background Papers that writers are searching for devices for inter-level co-ordination between existing departments sharing in the administration of a given function. There are, however, fewer suggestions for this. There is recognition of the importance of extension work, although the existence of national "action programs" complicates the adjustment of policies and emphasis.

Where the variety of jurisdictions, levels and functional agencies—each with a part to play in the development of comprehensive policy and its application to particular areas—must be integrated in considerable part by consent, the Background Papers recognize that the preparation and distribution of information, based upon research and educational programs, is important beyond the emphasis of any one agency or level. The present situation is analysed by Symington, who points out that "one may presume that this diverse pattern of jurisdictions serves the immediate purposes of the professional management and administrative personnel who function within them but, given this lack of systemization of administrative jurisdictions, it is understandable that resources information agencies should not have developed according to any clearly defined set of principles or even of working methods." He gives emphasis to the importance of the field man as "the

essential link in effective interpretation to the public," but support is required through having departmental employees "information oriented." "In brief, a comprehensive program of in-service information is required so that... a sense of shared responsibility for implementation of desirable management policies is inculcated in all members of the departmental staff."

The same emphasis upon the training of personnel in natural resources activities, cited above for information work, appears in many of the papers. Thus Carr concludes that in the development of a more adequate "legislative administrative structure and implementing the programs it provides for the... key problem is personnel. The complexity of the problems and the relationships involved and the need for a broad, far-seeing approach in its development make the selection of particularly capable personnel a critical factor." Mair develops the same point for wildlife resources, and McEwen for personnel in recreation, as a major assignment for a national recreation authority.

#### SUGGESTIONS FOR WORKSHOP DISCUSSION TOPICS

##### 1. *Co-operation at top executive policy-making levels Natural resources councils*

There are many suggestions for some kind of comprehensive policy council, at national and provincial levels, covering all natural resources agencies. What would be its relation to the Prime Minister and Cabinet? Would it be, preferably, composed of ministers or other chief executives of relevant departments?—or of deputy ministers? Would it be given a place in the policy-administration process at which departmental natural resources proposals of more than immediate operations nature would be submitted for review, and with the right to submit its views on them to the Cabinet, and perhaps to relevant committees of legislative bodies? Should there be members drawn from relevant interest groups, and citizens who have in some way contributed to natural resources knowledge or civic activity outside the legislative-executive points, so that they may be considered staff aids to the electorate on natural resources policy? Or is some such council only adding confusion and complexity without proportionate gain in comprehensive integration, and actual departmental co-operation?

##### 2. *Co-operation through more comprehensive departments*

Suggestions for reflecting the natural and economic ecological relations of natural resources in the structure of administrative departments have been made.

Perhaps a parallel is to be found in the establishment in various states of the world of departments of defence, incorporating the traditional special departments for army and navy and more recently air forces. Have there been detailed job analyses, however, which would show how this would affect operations, types of personnel needed, research requirements, and relations with non-natural resources agencies, and with agencies in other levels and jurisdictions? Would the present problems of obtaining more comprehensive policy and co-operation toward its application be approached better through a "co-ordinating" chief department executive and staff operating over existing ones and between them and the Prime Minister and Cabinet?

##### 3. *Co-operation through the budget process*

I was surprised to find so little discussion in the Background Papers of the budget process in the formulation of policy and the control of administration, especially when the Conference emphasis is on economic criteria. Can more comprehensive policies and a more integrated administration of them be achieved through this process, which involves the highest legislative-political-executive leadership of Prime Minister, Treasury Board and Minister of Finance, the administrative leadership of the Deputy Minister of Finance, and the economic analyses and other staff program and planning equipment of the Ministry or the comparable departments of local governments?

The flow of estimates from the lowest unit of an agency, through the operating line with points of successively widening oversight and responsibility is the major governmental process from the point of view of appraising past policies and formulating and proposing new ones. Particularly in the field, and in inter-level joint programs, it is possible for the budget officers at the center of the department and of the government to press for some interdepartmental co-operation. Regional representatives of central budget offices may encourage regional co-operation across bureaus and departments before ingrown agency proposals get so rooted that even the political heads are unable to modify them in the interest of a wider outlook and policy.

The estimating of expenditure and revenue and the subsequent executive and legislative review are a major planning process determining the total public share, and affecting other shares, in the national economic account. And the budget is the major economic plan for the fiscal year, with commitments made for years ahead. Here is a cluster of strategic points of decision at which co-ordination and co-operation may be attempted, encouraged, and indeed inevitably enforced.



#### 4. Personnel

Policy planning inevitably occurs where discretionary power is placed, and as we have seen, this is all along the line of operations. It is not the task of special "planners" alone. "Everybody plans." Hence the importance to the objectives of the Conference, and to our Workshop assignment, of personnel policy. Concretely, any changes in departmental operations reflecting changes in policy and emphasis, and requiring greater co-operation among agencies, must be implemented primarily by those civil servants who, in their careers, are moving from the more special and technical duties and responsibilities of their entrance and earlier grades to posts with duties involving more contacts with other agencies, industries, levels of government and the public generally. There will be gaps in experience and educational background that may partly be filled in advance of practical experience by in-service training or educational leave.

There is also the much debated question of points of admission through classification systems (access to higher administrative posts through promotion from any field of entrance, versus preference to those entering into an "administrative class" on the basis of more extensive general education, and given preference through apprentice assignment in general administrative work). And under any career system, some kind of staff college assignment from across all relevant departments, or luncheon and dinner discussion groups, may be employed. Since the Conference objectives (and Background Papers) call for wider ranges of thinking, greater administrative insights and skills, and qualities of growth and adaptability, should the classification, recruitment and career arrangements for personnel be explored to see whether they reflect these considerations?

#### 5. Land surveys: surveys and extension service: co-operation among agencies and levels from the ground up

This student of administration searches, finally, for some clue whereby he can find some pathway to order and meaning amidst the rich complexity and variety of organizations and processes, a pathway along which steps may be taken toward the goal of the Conference through co-operation among the agencies and levels. He has employed the search for strategic points of decision-making, down to the client-citizen, whether individual operator, corporation, or Crown-owner. It is the place of each one of these, ultimately, to effect the applied co-ordination of programs and policies through his analysis of his resources, and the development of his own budget of physical "inputs and outputs."

What follows is but a drawing on the papers of

Carr on "Resource Adjustment in Agriculture," of Baker and Solomon on "The Role of Agricultural Extension," and of Gamble on "Mapping," and some observation of comparable experience in the U.S.A. The consent, indeed active participation, of the operator must be won; even more, his experience and thought must be recruited into policy formulation. Granted that cumulative advance in surveys, for example of soils, land use, and land capability, is basic to the development of policy by whatever agency and level, and of crucial importance to the land use manager on farm or forest. Can this survey work be related to the crucial work of the extension official? Could the integrating of the surveys around a time and area schedule be linked with the local government units, as well as with the individual operating unit managers within them, so that both individuals and local communities are involved directly in the evolution of policy which reflects the place of natural resources in national economic growth?

There would seem to be dangers in a widening gulf between those concerned with the national or special technical aspects of natural resources policies and those having to deal with an immediate and local enterprise. The knowledge of both is required in a mix that will be both tasty and nutritious.

The individual farm budget is important; so are the national and provincial budgets. Can there be some explanation of their interrelation by the picture of their common base, the land, and the interpretation of it, by the extension worker, to that land which is known most intimately by the operator and his neighbors? And should not all officials, of whatever level or agency, "action" or "educational," with dealings in a given local government unit in matters of natural resources, group themselves as the collective staff aid of the individual operating units, and the local governing body dependent on their efficient management?

#### Discussant (Mr. BOLSTAD)

Our Monday sessions emphasized the importance of resources in economic growth. Yesterday we considered major problems in each of the resource sectors. Today's workshops are examining problems which cut across resource sectors. We are concerned about administration and how to improve interdepartmental co-operation for more effective resource management.

I wonder if ours isn't one of the two most important subjects being discussed at this Conference. The other, I suggest, is objectives. Canada's objectives for the use of natural resources is the overriding theme of the whole Conference. Achieving these objectives is largely a question of *administration*: how can we apply all the knowledge we have about



resources and economics to solving the problem of economic growth?

The subject of administration is a particularly difficult one. What can we legitimately cover in a discussion about administration? Should we talk about the division of work between governments and the division among government departments? Or about planning procedures which governments follow in making decisions? Or about the selection and training of staff? Or about *all* these, and others?

Another difficulty is one of language—and communication. It seems to me that most people use the same words in talking about this subject, but with different meanings. I am referring to words such as management, executive, policy, organization, operations, functions, co-ordination, program, process, procedure—and there are many others. All of this adds up to a very real problem in communication and I suspect that we will suffer from it today.

May I congratulate Professor Gaus on the paper which he has delivered today. One of its main values is to help us chart a course, to help us know what to discuss in a workshop on interdepartmental co-operation.

Professor Gaus defines administration in a very broad sense and views the administrative process as a series of decisions made by different people at many strategic points: the electorate, political parties, the legislature, the government, ministers, civil servants at all levels and citizen-clients. Professor Gaus points out that people at all of these strategic points are involved in policy-making.

What is significant about Professor Gaus' approach to administration is that it prevents us from viewing our subject too narrowly. Lacking his approach, we might easily have confined our discussion to a question like this: what kind of planning and co-ordinating agency is needed at the federal level? Professor Gaus suggests that there are many other things to consider. Professor Gaus asks "How informed and adequate is the formulation of policies at the various points of decision making?" This raises the question of research assistance in various governments and at various levels of each government. It raises the question of selection and training of staff and methods of keeping them informed. It raises the question of extension-education since, as Professor Gaus points out, the consent of the client must be won if the policy objectives of the law are to be realized.

Professor Gaus also stresses the purpose of the Conference and reminds us not to concentrate solely on ways of improving co-operation among resource agencies. With the emphasis of this Conference on the uses of resources in economic growth, he reminds us also to consider ways of improving co-

operation between resource agencies and other agencies of government.

As I studied the Background Papers, I realized the magnitude of the problems facing us in this Workshop. We are concerned with *six* resource sectors. We have *three* levels of government. The number of agencies involved in any one resource sector, particularly in agriculture and water, is staggering. And we are concerned not only with co-ordination within each of the resource sectors but also with co-ordination among the various sectors. Finally, we are concerned in this Conference with achieving better co-ordination between resource agencies and other agencies of government to ensure the wisest use of resources in economic development.

Now what, specifically, do I think we should talk about in our Workshop today? The Steering Committee for this Conference has asked us, "How do we improve interdepartmental co-operation for more effective resource management?"

I think that we should attempt to identify methods by which interdepartmental co-operation might be improved. Ideas for such methods will come both from the practical experience which we have all had and from the free-wheeling use of our imaginations. In suggesting methods, I would like to see us adopt Professor Gaus' approach and consider a wide range of different methods. Out of these will emerge a few which we consider to be of particular importance. The others may also be of value or may lead to something of value in the future.

If I may, I'd like to suggest a few methods which occur to me from my experience, from reading the background documents and from the paper which has been presented by Professor Gaus.

One method of improving interdepartmental co-operation is through a clarification of the goals of resource management. This is particularly important at a time when our goals for resource management may be changing. Further, these goals must be communicated to, understood by and accepted by the public, political parties, parliaments, civil servants and the clients of resource programs.

This leads me into a second method of co-ordination: conferences and similar meetings. This Conference is an exceedingly good illustration, not only of a method of clarifying goals (and hence improving co-ordination) but of communicating these to many people (and thereby improving interdepartmental co-operation).

There are many organizational methods of improving interdepartmental co-operation, or at least of attempting to do so. I am using the word "organization" in a broad sense, referring to a wide range of changes which might be made in the machinery of government in Canada. Organization changes could include: more comprehensive departments at either

the federal or provincial level, or both; the establishment of super-departments to co-ordinate existing agencies at either the federal or provincial level, or both; the creation of planning or research agencies at various levels; the establishing of formal federal-provincial or interprovincial co-ordinating machinery; changes in the field organization of federal and provincial departments; changes in local government organization; the creation of watershed or other area organization; and there may be many others.

I would like to mention a few specific examples of co-ordination through organization:

1. One which interested me was the Conservation Commission described by Mr. Thorpe in the Background Papers. This Commission, which was born in 1910 and died in 1922, represented federal and provincial governments and universities and was formed to act as a co-ordinating agency for research and studies carried out across Canada. Mr. Thorpe claims that the Conservation Commission did more than any other institution to draw public attention to resource development and to emphasize integrated development of resources.

2. Mr. Thorpe mentioned another agency which sounded equally interesting to me. During the National Conference on Reconstruction held in August, 1945, the subcommittee on natural resources proposed the establishment of a National Development Board which was to be advised by regional committees representing all resources.

3. We have in Saskatchewan a kind of super-departmental agency for co-ordinating and approving the planning and research required for the development of the South Saskatchewan River Development project. The South Saskatchewan River Development Commission has been given powers to review and approve the plans and budgets of a number of program departments for the geographic area of the project. This review and approval has been built right into our planning-budgeting procedures.

4. Another example of a kind of super-department which is considered from time to time in Saskatchewan is a Department of Local Government. Many program departments—Health, Welfare, Education, Agriculture, etc.—have direct relationships to special purpose units of local government in the province. A Department of Local Government would co-ordinate the planning of local government, the provision of financial assistance and some of the services which are now provided separately by a number of departments.

5. I am sure that there are many examples of federal-provincial co-ordinating committees. In the finance field there is a Continuing Committee on Fiscal and Economic Relations. In the Background Papers Mr. Carr mentions a National Co-ordinating

Committee on Agriculture which, in the past anyway, has served to co-ordinate federal and provincial agricultural policies.

6. Another organizational method of co-ordination is the watershed or area form of authority. There will be many here who can discuss the effectiveness of this method with more authority than I. It seems to me that the creation of this kind of organization solves some problems of co-ordination but creates others.

7. In considering organization methods of co-ordination we should not overlook improvements which could be made in field organization. Mr. Carr makes the point that "the ultimate objective of over-all resource organization should be maximum co-ordination at the level of the individual farm, watershed area, etc."

Finally, in talking about alternative organizational methods of co-ordination, let us not forget the need to co-ordinate resource agencies with other government agencies which are also concerned with economic development.

I have talked about improving interdepartmental co-operation through the clarification of goals or objectives, through conferences and meetings, and through changes in organization. What are some other methods of improving interdepartmental co-operation?

A fourth method is through the people who work in resource fields and in government generally. Carr says that the task calls for people with special competence, enthusiasm, devotion, vision and versatility at all levels of government. A good deal has been said in this Conference already about the importance of the human resource. I suggest that this is one important method by which we may be able to improve interdepartmental co-operation.

Professor Gaus mentioned another method of improving interdepartmental co-operation which I believe to be extremely important, particularly when we are talking about the use of resources in economic development; this is the planning-budgeting process used in governments. As Professor Gaus said, this is the major governmental process through which plans are developed and government-wide co-ordination is achieved. This method can be effective in single jurisdictions in Canada at the present time, but we lack a truly national budget which considers all the resources of the country in relation to all the needs. This may be getting beyond the terms of reference of this Workshop, but until something like this is possible, really effective interdepartmental co-ordination will be difficult to achieve.

I would like to close by just mentioning a number of other methods of achieving interdepartmental co-operation which we may want to discuss. These include: encouraging technical resource people to be-



come active in the Institute of Public Administration of Canada—an association devoted to the study and improvement of government administration in Canada; devising better programs of information-education; delegating legislative powers by one level of government to another; and, finally, cultivating an awareness of the need for interdepartmental co-operation and a determination to do something about it.

I am hopeful that out of our discussions today will emerge a few methods which we consider to be of major importance in improving interdepartmental co-operation. We should not expect to find final answers in a one-day workshop; all we can realistically expect is to provide some guidelines to further study of this problem.

#### Discussant (Mr. GATHERCOLE)

I agree with the theme of this Conference that the management of our natural resources should be formulated in such a manner as to best promote economic growth and development. The subject with which we are concerned here—"How do we improve interdepartmental co-operation for more effective resource management?"—admits no easy answer. The complexity of our political and economic organization has brought into being at least three tiers of government, and a variety of government departments, public and private agencies, and other bodies, for the purpose of planning, protecting, conserving, developing or utilizing our natural heritage. Economic activities associated with agriculture, forestry, mining and water resources overlap one another. There are no sharp dividing lines. None of these branches of activity can be put into a self-contained compartment. In Ontario we have from time to time made a survey of the government's expenditures on the conservation and development of resources. We discovered that while the major expenditures were being made through the Departments of Lands and Forests, Agriculture, and Commerce and Development, substantial expenditures were also being made by the Department of Highways, the Department of Public Works and public utilities such as the Hydro-Electric Power Commission of Ontario.

In order to avoid overlapping and duplication, the provincial departments work closely together. Close relationship is also maintained between Ontario Hydro and the Departments of Lands and Forests and Agriculture with respect to the construction of dams, the regulation of water levels and the release of power sites and lands for water power development.

Where co-ordination of functions tends to encounter difficulties or require some special study and consideration, committees have been established. Examples of *ad hoc* committees are the Private Lands

Liaison Committee (1959), and the Public Lands Investigation Committee (1959). The duties of the former committee, which consists of technical officers of the Departments of Agriculture and Lands and Forests, are mainly to investigate and make recommendations to their respective Ministers on administrative procedures and policies common to both forest and agricultural land.

The Public Lands Investigation Committee—a committee composed of departmental officers and outside specialists in forestry and mining—was established to examine into and make recommendations for the disposal of public lands under the Mining Act and the Public Lands Act. It is trying to find a wise balance between the surface-interests of the holder of mining claims and those of representatives of the forest-based industry.

On occasions, new organizations have been established in order to major or specialize in some particular branch of conservation. Several years ago the attention of the government was drawn to the increasing pollution of our lakes, rivers and streams which was accelerated by the rapid growth and concentration of industry and population since World War II. After an initial inquiry, the Ontario Water Resources Commission was established in 1956 to construct and operate works for providing water and sewage facilities and to supervise water works and sewage treatment plants and to ensure a sanitary environment for all. Since its inception the Ontario Water Resources Commission has made a distinct contribution, not only to the supply of water to individual municipalities or co-operating communities on a regional basis but also to the abatement of pollution. To facilitate interdepartmental co-operation the Minister of Municipal Affairs presides as Chairman of a Cabinet Committee of departments concerned.

A Cabinet Committee—called The Parks Integration Board—has been set up to rationalize and co-ordinate Ontario's expanding parks system. For administrative economy and convenience, the Ontario Department of Lands and Forests operates an extensive system of some 75 parks throughout the province, particularly in the more northern areas. There are also two large park complexes operated by the Niagara Parks Commission and the Ontario St. Lawrence Development Commission. In addition, some 50 parks are administered by conservation authorities in co-operation with the municipalities and with the financial assistance of the province. The objective of the Ontario Parks Integration Board is to provide a balanced and integrated policy for the management and development of all these parks and also for the creation of new parks.

I am of the opinion that a certain amount of flexibility regarding problems of natural resource man-



agement and administration is desirable and that the machinery of conservation should be adapted to the requirements of each particular province and to the developments of our economic structure. One pattern of organization may produce good results for a considerable number of years. However, we live in a time of rapid changes and our country has—particularly since the end of World War II—experienced a phenomenal economic development. In the dynamic world of today it is necessary, more than ever before, to re-appraise our situation and decide whether it is advisable to revise or renovate our methods of doing business and conducting government.

In this connection it is interesting to point out the establishment, early this year, of a Cabinet Committee on Conservation in Ontario. Members are the Treasurer, and the Ministers of Lands and Forests, Agriculture, Mines, Commerce and Development, Municipal Affairs, Highways and Energy Resources. The function of this Committee consists of the co-ordination of all departments whose activities are concerned with the conservation of the natural resources of the province. The Committee is now engaged in preparing a summary of the projects of all provincial departments relating to the conservation field. This is intended to be the first step toward an effective co-ordination of these various activities at Cabinet level. To assist the "Cabinet Committee on Conservation," an Advisory Committee, composed of senior technical officials of several departments, has been appointed.

I consider this development an important step toward improved co-ordination and integration of natural resource policies within the Ontario government. Since the administration of our country's natural resources is largely a matter of provincial responsibility, co-operation between government departments within each province is a matter deserving the most careful attention.

Federal policies are also of notable importance. The federal government has on occasions provided valuable assistance to the provinces with respect to certain aspects of natural resource administration. Its financial aid in the preparation of Ontario's forest inventory, initiated in 1946 and completed in 1958,

has enabled our province to acquire an excellent assessment of the timber wealth on some 285,000 square miles of its forest land. The inventory, which is being up-dated on a continuing basis, represents an indispensable tool for forest management. There are undoubtedly additional opportunities for further federal-provincial co-operation in the field of inventory surveys and related matters. However, care should be exercised to ensure that the federal government does not extend into the traditional areas of the provinces, areas in which they have accumulated broad knowledge and experience.

Of greatest help to the provinces would be an increase in the tax revenue which is derived from natural resources and particularly the forest product industries. At the present time the provinces bear the main expense of the conservation and development of these resources while they received by far the smaller share of the tax dollar paid by the companies concerned. An adjustment in natural resource taxation more favorable to the provinces would enable them to expand conservation and regeneration services in a manner which would be mutually beneficial to all.

The years ahead constitute both a challenge and an opportunity. Our population continues to grow at a good pace. By 1980 our national population is projected at 27 million and the Ontario population at 10 million. Population growth in the United States and in markets abroad offers even greater opportunities for the increased development of our natural resources and manufactured products. To meet these expanding needs and to assure our people of ever higher standards of living, the optimum utilization of our natural resources is of the utmost importance. In order to reach this goal, close co-operation between government departments and agencies and between different levels of government within the framework of a positive and comprehensive program is indispensable. Only under these conditions will it be possible to implement the general principles adopted by the North American Conservation Conference in 1909, namely that "resources are to be developed, used and conserved for the future, in the interest of mankind."

## DISCUSSION

The Workshop heard of the experience in several provinces with measures designed to improve administrative co-ordination. Several methods have been used—with greater or less success—to provide for co-operation within any given resource field, and there are some examples of attempts to co-ordinate all aspects of resource administration.

The discussion revealed implicit agreement that improved co-ordination is clearly desirable, but that it is not an end in itself. While formal machinery is useful, attitudes are also important.

As a basis for discussion, two propositions were placed before the Workshop:

1. Co-operation would be facilitated by the

establishment of a national resources policy committee, consisting of adequate ministerial representation from the federal and provincial governments, supported by their technical advisors, and with a permanent secretariat to:

- (a) Operate a clearing-house for information on resource developments;
- (b) Prepare, in conjunction with other agencies of government, reports and suggested courses of action for the policy committee; and
- (c) Arrange periodic national resource conferences.

2. Co-operation would also be facilitated if the federal government and each provincial government were to establish effective administrative

means, appropriate to its own structure, to formulate integrated policies and co-ordinate resource development programs.

On the first proposition, the Workshop considered that any such committee's role should be to plan and co-ordinate programs, and not to make executive decisions on their implementation. There was general agreement that an effective committee would require adequate ministerial representation from the federal and provincial governments.

There was full agreement on the second proposition. The Workshop emphasized that the fullest possible use should be made of existing administrative and budgetary arrangements within governments as part of the co-ordinating process.





# *Administration Workshop B*

WEDNESDAY, October 25

Getting longer term perspectives and plans  
in the administration of renewable resource programs.

- Chairman: S. S. PETERS, Deputy Minister of Resources, Newfoundland Department of Mines, Agriculture, and Resources.
- Co-Chairmen: D. A. WILSON, Manager, Marketing Research, Canadian International Paper Company.  
W. H. HORNER, Deputy Minister, Saskatchewan Department of Agriculture.
- Lead-Off Speaker: H. L. KEENLEYSIDE, Chairman, British Columbia Power Commission.
- Discussants: G. ROSS LORD, Chairman, Metropolitan Toronto and Region Conservation Authority.  
D. W. GALLAGHER, Economic Advisor, Government of New Brunswick.
- Rapporteurs: A. M. COLL, Chief, Resource Industries Division, Canada Department of Trade and Commerce.  
MICHEL BÉLANGER, Director of Planning, Quebec Department of Natural Resources.

## **Lead-off Speaker (Mr. KEENLEYSIDE)**

This Workshop has been assigned the task of discussing ways and means of getting longer term perspectives and plans in the administration of renewable resource programs. The subject does not suggest how this shall be done and I shall make no attempt to draw a blueprint of future plans. But if the governments have any serious interest in this Conference the shape of such a program may depend, to some extent, on the outcome of today's session. My purpose is to review some of the principles of resource policy programming so that our discussion may have a base from which to start.

The subject necessarily implies that past perspectives and plans have been inadequate. The early, locally oriented approach to resources may have been satisfactory for local and short-term purposes, but in the context of modern knowledge and of contemporary and prospective economic conditions, Canada needs a longer perspective if we are to maximize the benefits to be obtained from the management of our national resources.

Perhaps a look at the way thinking on resource policy has developed in Canada will help us evaluate our present programs and set our objectives for the future.

Essential to an understanding of the history of resource development in Canada is our Constitution as defined in that tiresomely ubiquitous statute, the British North America Act of 1867. It divides the various resource responsibilities between the federal and provincial legislatures. Under the Act the provincial legislature has the power to enact laws concerning the management and sale of public land belonging to the province (and the timber thereon), mineral rights, local works and undertakings, property and civil rights and all matters of a purely local nature. The Parliament of Canada is endowed with all legislative powers that have not been expressly assigned to the provinces.

This may appear to give very wide power to the Parliament of Canada. But this is not, in fact, the way it has worked out, because the federal powers have been strictly limited by judicial interpretation. The

words in a document, even in a constitution, mean only what the judges say they mean. Therefore, the real division of legislative authority in Canada can be found only in the reports of the court decisions on cases involving the interpretation of sections of the B.N.A. Act. For many long years the judicial committee of the British Privy Council decided almost every case in favor of the province concerned and against the authority of the national government.

One exception to our general jurisdictional pattern in Canada is found in the case of agriculture where responsibility is shared equally by the provincial and federal legislatures, with federal law prevailing in the case of conflict. Thus agriculture, among all our resources, is unique in having a built-in imperative for conflict resolution. In all other cases basic responsibility is assigned exclusively either to the federal or to the provincial legislatures—and sometimes one is tempted to add “never the twain shall meet.”

Difficulties resulting from the constitution become very apparent in the case of river development. Water use under provincial jurisdiction conflicts with fish and navigation under federal. In such a case, as illustrated by the Fraser River, there is no established constitutional means of arbitrating the problem.

The Canadian Constitution is silent on procedures for settling interprovincial disputes. In the United States, disputes between states can be litigated in the highest federal court but there is no such provision in Canadian law. Here is an obvious point for an amendment to our Constitution. In cases where one resource involves two provinces, such as in a river basin development, conflicts could arise when one province is unwilling to accommodate another. Of course, there is nothing—except human perversity or political expediency—to preclude two or more provinces or a province and the federal government from establishing joint administrative arrangements in appropriate circumstances. In some cases these human and political handicaps can be overcome.

This is the constitutional background to the development of resources in Canada. It is the foundation upon which resource programs have been built and upon which present organizational arrangements rest. But is this foundation adequate for the future? Will it support the growth that will occur over the next decades or generations? Should the foundation be repaired, overhauled or perhaps rebuilt? Fortunately the B.N.A. Act has never been clothed with the aura of sanctity that has enveloped the Constitution of the United States. Amendments can be considered without their advocates being suspected of sacrilege or subversion.

But we do have handicaps that are peculiarly our own handicaps of a political nature. We have no reverence for our Constitution as such, but any sug-

gestion of a redistribution of powers or responsibilities between the federal and provincial governments immediately sets the alarm bells ringing. In his address on Monday night, the Prime Minister felt it necessary to refer to the protection of provincial rights over twenty times!

Resource planners, like all thoughtful people, should be students of history: perhaps a look at some of the programs of the past will help us to assess the adequacy, or otherwise, of our present jurisdictional and administrative arrangements. If they are judged inadequate, then perhaps the record may point the way to future policy.

Early applications of law to resource use have been typically short-range and single-purpose. As early as 1859, for example, British Columbia recognized a resource problem when it introduced water rights statutes under the Gold Fields Act to provide for orderly appropriation of water associated with placer mining. These statutes modified the law of riparian rights and were probably quite adequate for the immediate purpose.

A little later, more general interest was aroused in resource development policies and this was reflected in the speeches and activities of President Theodore Roosevelt. Under his sponsorship the North American Conservation Conference of 1909, in which Canada participated, adopted a Declaration of Principles on resource development and these had some influence on subsequent Canadian thinking. They stated that, in general, resources should be developed, used and conserved for the future in the interest of mankind. (Pretty platitudinous, but like most platitudes basically true.) Multiple use of streams was to be studied. Public ownership of forest lands and regulation of cutting were recommended. (It was many years later before the cut-and-get-out philosophy of the early forest industry was replaced in any significant degree by the concept of sustained yield. Even yet there is a long way to go before our forest industries can be said to be applying in full the principles that have been accepted in theory—and are invariably eulogized at forest industry gatherings.)

A Canadian Commission of Conservation was established in 1909 under Sir Clifford Sifton. The Commission served a useful purpose in stimulating rational thinking on the development of natural resources by all levels of government and by private enterprise. The Commission did little, however, to emphasize the importance of the economic approach to resource development.

The 1930's were years of depression. Public discussion on conservation was stimulated by the necessity of trying to solve what had become severe economic problems. The tragic state of agriculture, the need to provide employment, and the insolvency of many

municipal governments involved the federal and some provincial authorities in public resource development. Included were projects such as multiple use watershed development, irrigation and water supply. The Prairie Farm Rehabilitation Act of 1935 and the Maritime Marshlands Rehabilitation Act of 1939 were designed as instruments of economic policy to assist in establishing a sound and progressive agricultural economy. In both cases, the dual federal and provincial jurisdiction facilitated the development of the projects to the benefit of the affected regions.

Does this suggest that the extension of the principle of dual jurisdiction might be nationally beneficial? If so, is there any shred of evidence that such a proposal would be acceptable to the provincial authorities? Is there, in fact, any point in our discussing such a suggestion?

The second World War provided a real impetus to the study of natural resources and their relation to social problems. When the Advisory Committee on Reconstruction was set up in 1943 to study economic and social life in Canada, a subcommittee on natural resources argued persuasively that resource development should be approached as a unified problem.

By this time the idea that all resources were interrelated was being more widely recognized, in theory at least. Recommendations made to the National Conference on Reconstruction in 1945 included conservation measures, a rural electrification program, resource surveys, research programs, and early decisions on cost-sharing arrangements. The federal government suggested a new approach to the division of responsibilities between itself and the provincial governments, in which the federal government would be responsible for basic surveys and for research on a national scale essential for the conservation, development, and management of natural resources. The Conference also recommended that federal responsibility for resources which are interprovincial in nature should be recognized.

These few examples illustrate the changing trend of thinking on resource matters. Early development was for immediate and local purposes; it was an end in itself. Resource management in the general interest did not hold an important place in Canada's early legislative and administrative framework. It took a grim and prolonged depression to introduce the idea of serious economic planning into our resource development concepts. But it is clear that Canadian current constitutional law and practice, as so often and so naturally happens, reflects conditions existing at the time it was developed or enacted. It does not facilitate the evolution of a well-designed resource policy in a modern, complex society.

What is the actual state of resource development in Canada today?

On the federal level, as an example, the Advisory Committee on Water Use Policy brings together high ranking officials of various departments who may then become aware of possible conflicts among the government's policies on water matters and can advise accordingly. Federal-provincial co-operation is illustrated by the South Saskatchewan River Development Commission and the Fraser River Board.

But far too often the emphasis in resource studies is on the physical and engineering aspects—to the neglect of the economic and social.

The studies of the Fraser River Board, a joint federal-provincial agency charged with responsibility for advising the federal and provincial governments on all aspects of the river's development, have so far been on the engineering aspects only. The fisheries interest continues to conflict with that of power, but in fisheries research the emphasis has been on biological problems. With power it has been largely engineering. It is unlikely that any river basin will be developed to the best advantage of the general public unless compromises are accepted among the various resource jurisdictions. Certainly, physical and engineering solutions are not enough on which to base political decisions which may have very important effects on the local or national economy and on the kind of society in which our people live.

Pollution has become a serious problem. Increasing population and industrial expansion have increased the demands on both air and water, and are fouling both. The pouring out of fumes and raw waste has reduced the usefulness of what should be pure sources. Only minor steps have been taken to resolve these problems, as for example the reorganization of agencies in Ontario to consolidate water pollution control in the Ontario Water Resources Commission. In New Brunswick also, central control of pollution is being effected by the provincial Water Authority. But these are partial and isolated instances.

The encroachment of urban housing—or sprawl in many cases—onto good agricultural land is becoming a serious problem to regional planners. In the Fraser Valley the farms are rapidly being replaced by residential subdivisions. The orchards of the Okanagan are being chopped down to make way for housing developments. Is this consistent with increasing requirements for food supplies? Should not land use be planned over a wider area than municipal boundaries before we find that the land best suited for one purpose is being used beyond reclaim for another? Are we really content to accept the Los Angelization of our countryside? Surely Canadian civilization can offer something less appalling than this.

The absence of a clearly defined policy for Canadian



resource development is mentioned, with characteristic timidity, in last year's Report to the House of Commons by the Standing Committee on Mines, Forests and Waters. The Committee summed up its findings in these words:

The broad objective... should be to recommend a program which will result in the orderly development of our land and water resources on a multi-purpose basis. The nature of the federal participation should be such as to encourage economically feasible developments while preserving the maximum possible local participation and responsibility.

\* \* \*

The evidence revealed considerable overlapping of authority relating to water resources, not only as among federal departments, but at various levels of government, federal, provincial and municipal.

The need for long-term perspectives and plans in resource management is emphasized by the Gordon Commission's estimates of future Canadian requirements for various commodities and services. Population in Canada has been estimated at 26.5 million by 1980. Food requirements are expected not only to keep pace with population, but to increase, in some commodities at least, with greater per capita consumption. Part of this increase is, no doubt, due to changing technology; much of it to rising standards and diversification of demands. By 1980, wood requirements may increase by over 50 per cent. In this case changing technology produces new products and creates new demands. It is already possible to supply hamburger steaks and fur coats from wood products. The social structure of the communities built on the forest industries is subject to change and this pattern of growth and modification will affect most resource industries. Sound management is essential if our resources are to be developed wisely, if supply is to match the demand, and if the public interest is to be well served. The future planning and administration of resource programs must recognize this requirement.

Financial policies should be clearly defined. At present there appears to be no consistent policy for the financing of resource development programs by the federal or provincial governments or by joint arrangements. For example, the federal government has made an outright grant for the development of the South Saskatchewan River, including certain power components, but has offered only to assist British Columbia in the financing of the Columbia River with a repayable loan—to be made more palatable by being described as an "investment."

These examples raise the question of whether the federal government should stimulate resource development through a system of grants and loans but

without assuming a proprietary interest; or should it participate on an equity basis? Should the federal government and the provincial government collaborate in establishing and financing resource development programs in which each government might expect to exercise some degree of control?

One proposal which might be considered is the establishment of a National Development Program Fund to consist of federal monies accumulated by the setting aside annually of X per cent of the national (federal) income. From this Fund provinces would be entitled to draw defined amounts up to an agreed percentage of the cost of approved projects. In the case of the less-developed provinces the percentage might be higher, and the drawing rights proportionately higher, than in the case of the wealthier provinces. In working out the constitution for such a Fund, consideration should be given to the advisability of including within its terms of reference some or all of the existing schemes involving federal subsidy payments to the provinces. Obviously such a proposal would require a great deal of careful designing, but it would not be impossible to provide the necessary protection against abuse. At least it would introduce some sense of order and a measure of stability into what is now a realm of fluctuation, uncertainty and contradiction.

There may be no single formula applicable to all cases, but an essential factor of any successful formula for resource development is mutual respect and confidence between the governments concerned. This may often be difficult but it should not be, by definition, impossible.

The role of research needs further consideration. In a society concerned with increasing production of goods it may be assumed that most research will be influenced by the market. This, in turn, is affected—often malevolently—by the impact of advertising. The trend toward planned and rapid obsolescence and the consumption of unneeded goods often militates against the efficient processing of raw materials and their end products for the maximum benefit of society. Basic research on our national resources should be divorced, as far as may be practical, from the effect of artificial influences. Our research should not be the handmaiden of social and economic competition. It is arguable that the federal government, with its relatively extensive financial resources and its ability to employ diversified technical skills, is best suited to conduct sound research on a national basis, and to act as an advisor to the provinces and as a catalyst to industry.

No hard-and-fast rules can be laid down for the type of organizational structure that can get the most from resource development plans. Whatever it is, it must of course conform to the constitutional rules. If the rules are inadequate—and it has been sug-

gested that in certain aspects they are—they should be overhauled. If that is impractical, then the organizational framework must just be designed to fit the constitutional foundation as well as it can. In those cases in which it is not feasible or not desirable for a government to assume direct planning, development, and management responsibilities, these duties should be delegated to an agency vested with the proper authority. Where more than one government is involved, such an agency should be jointly constituted.

It is axiomatic that any public organization that is given the responsibility for planning and developing the resources of a region should represent the people of the region. Representation might include federal, provincial and local appointees or any combination that includes the last of these. On the basis of past Canadian experience, such an organization should normally be a business-type operation held accountable for its recommendations and for the execution of its plans.

This is not to suggest, of course, that public agencies should be the only instruments for the development of the resources of a region. A properly constituted and flexibly managed public authority, responsible for the resources which lend themselves to large-scale, monopolistic development can be a tremendous stimulus to private business. (T.V.A. is an example.) This is particularly so where private business, operating in the fields affected by competitive market forces, can obtain the benefits of the public planning and management of resources such as water and recreation which are related to the environment.

It is now the task of this Workshop to discuss this subject with a view to recommending courses of action for the future administration of resource programs. If this task is to be accomplished it must be approached with an open mind, recognizing that past expediency may be unsuitable as future policy. It should be approached on a national scale with the welfare of the general public as its recognized and ultimate purpose. Objective, long-range thinking on the perspectives and plans for future resource programs will contribute to the achievement of this purpose. Leadership in such thinking is, for the moment, our responsibility.

#### Discussant (Mr. GALLAGHER)

Dr. Keenleyside has outlined the constitutional and historical development of resource-oriented activities, and has as well pointed to the present and future requirements of a sound multiple use resource development policy. In addition, the various Background Papers have tended to generally support the views expressed by Dr. Keenleyside and have indicated that if we are to obtain the long-term perspective neces-

sary to sound administration of resource policy we shall need:

- (a) Much better co-ordination between various levels of government,
- (b) Much greater acceptance and use of long-term planning techniques,
- (c) Some acceptance of a large share of responsibility by the federal government, and
- (d) Uniformity and flexibility in the various administrative approaches to planning, such as regional, river basin, and urban area, approaches.

As a discussant, not only of Dr. Keenleyside's paper but of the Background Papers as well, I feel it is not my task to introduce new topics to the discussion, but to comment briefly on some of the major implications of what has already been said. At this stage, I would like to comment on four aspects of the problem which confronts us in this Workshop.

The first involves the constitutional problems which may or may not confront the administrator. You may recall that it has already been pointed out at this Conference that there are no constitutional barriers as long as the representatives of government at various levels are willing to sit down and discuss matters intelligently. In my view, the degree to which we may expect such discussions to occur constitutes a very significant barrier to the sound implementation of multiple use resource policy. Dr. Keenleyside has pointed out that the major responsibility for resource development (and I am not particularly concerned with resource conservation at this moment) has been left to the provinces, with the federal government holding what have been called the residual powers. In other fields which pose the same constitutional problem, and even in the resource field to a degree, the federal government has become involved either in the negative sense by delegating responsibility to the provinces, or on a more positive basis by sharing the financial burden of a joint program with the provinces concerned. Over the past few years there have been more and more tendencies on the part of the federal government to enter into shared cost programs with the provinces in the resource field, usually on the basis of costs of development or conservation being shared 50-50. There has however been no such delegation or sharing of the revenue powers related to such resource activities.

If these principles, as we see them now, are to be applied to a much greater extent in the area of resource administration (and I for one believe that they shouldn't) then I can see the formation of two very large problems in the very near future. First, if the revenues from resource activities, which accrue largely to the federal government, are not split more equitably, then the provinces will find that they



haven't sufficient funds to finance their share of such development projects.

Secondly, existing national shared cost programs are in fact, "national." Every province is treated exactly alike financially that is, 50 per cent of the cost of projects. However, the actual cost of development, the needs of the province, and its fiscal ability to raise funds, tend to vary significantly from province to province. Thus, a province like New Brunswick would have to impose a substantially larger tax burden on its people to provide its share of a national development program than would the province of Ontario. What will be required in this area is a great deal more flexibility from the financial point of view, with recognition of differences in fiscal need and differences in development requirements.

The second aspect which I would like to discuss is related to the problems of co-ordination. The Background Papers have almost invariably suggested that additional co-ordination is required. This co-ordination would be both vertical—that is, intergovernmental—in nature, and horizontal—that is, involving co-ordination between the various departments of any one government. Although there can be no doubt that such co-ordination is of vital importance, I am quite prepared to suggest that this alone will be most insufficient to provide the type of administrative effectiveness which is really required.

As I see it there are two additional types of co-ordination involved. First, there is obviously a very close relationship between the development of renewable resources and the development of non-renewable resources. For example, there is the obvious relationship between the development of electrical energy from non-renewable sources such as coal, and its development by utilizing the renewable resource of our rivers. In addition, there is the even more obvious relationship between renewable and human resource development.

The second type of co-ordination required involves the relationship between resource development policy and general economic and fiscal policy at both the provincial and national levels. It would be extremely difficult for any province alone, or even jointly with the federal government, to develop and implement effective policies for resource development unless the general fiscal, monetary and economic policies of the federal government were in themselves providing the proper environment for such resource development.

To me these additional types of co-ordination are vital, since they constitute the over-all framework within which resource planning and administration must inevitably take place. It is obvious and even axiomatic that the renewable resources of this country cannot be developed in a vacuum. This leads immediately into points 3 and 4.

With respect to number 3—the question of responsibility for the development and implementation of such programs—it seems to me that renewable and other resources can only be developed effectively and economically, in the broad sense, within the framework of a broad federal policy of economic development. The reasons for this are quite numerous, but the fact that the federal government possesses the money, the skills and the policy instruments necessary to do the job should be sufficient in themselves. In addition, experience in other areas of the world has indicated that only by virtue of the existence of such policies at the national level have various regions been able to succeed in overcoming basic economic handicaps.

One of the basic requirements necessary for the development of such national policies should involve the removal of the present principle that every province or every region in Canada must be treated alike by the federal authority.

It seems to me that for too many years the "cult of the gross national product" has been much too prevalent in national policy. In other words, as long as the G.N.P. rose by 5 per cent per year national policy in the economic sphere was considered to be most effective. To me, this is a most paradoxical situation when large areas of the country have consistently been unable to participate in such generous rates of national economic growth. The implication of this, if true, is that what we most need is not a national policy for resource development, but a combination of regional policies with sufficient flexibility to enable peculiar regional needs to be met by policies implemented at the national level. This is particularly true with respect to the Atlantic Region of Canada where there is little enthusiasm for such national policies as were developed in the immediate post-Confederation era. We would find life quite adequate without a recurrence of such national thinking.

The fourth and final point is related to the organizations necessary to implement soundly developed administrative policy and administrative techniques. First and foremost, the provinces themselves must get their houses in order. At the provincial level there are tremendous problems of management which can be solved without additional expenditures of funds, but with only an expenditure of some brain power at the top policy levels of government. There have been few attempts provincially to co-ordinate the activities of various departments in the renewable and other resource development fields. Before the provinces can ask for additional institutions or additional organizational complexes either at the national or regional level they must initiate some move in the direction of obtaining co-ordination and sound management policies at their own level. After



this is done, there will be some need for additional structures to enable efficient planning and resource allocation in the renewable resource field. In pressing for and establishing such structure we should remember that we already have numerous committees, boards, councils, etc. It will be most important, in the interest of preserving administrative

sanity in the future, that we do not attempt merely to superimpose additional structures on the existing complexity. This would result in an impossible administrative situation. In this respect, I am certain that there is considerable merit in looking around us to determine what can be torn down before we decide what should be built up.

## DISCUSSION

Dr. Ross Lord discussed the role of local Conservation Authorities and emphasized the importance of participation and support by private individuals in any multi-purpose plan.

In discussing the extent of present government planning, the Workshop noted that a wide range of plans—many lacking specific performance targets—were scattered through the resource field. Only recently have governments started to plan for integrated resource development. The principal obstacles have been a lack of funds for this purpose, and limited public interest.

Economic conditions are always a limiting factor. There is still a lack of co-ordination within and between governments. Can the federal government reasonably be expected to carry out longer-term planning in areas where it has little or no jurisdiction? Experience indicates that governments have been relatively successful in planning for sectors in which they have direct control up to the level of implementation.

A number of examples were cited of the failure to take the long-term view. For instance, the pollution of many important waterways might well have been avoided. The overextension of farming into some land areas has resulted in unnecessary human hardship. Multiple failures were noted where quick spring run-off leads to soil erosion, summer drought, and lack of water for fire fighting. Earlier problems often reflected lack of modern knowledge but later failures in the

light of advanced technology sometimes result from indifference, and inadequate or complicated administrative arrangements.

In discussing the basic requirements of a longer-term approach, it was suggested these might be stated in one apt word—money. Leaving this question aside, it was agreed that the principal steps in planning must be:

- (a) A continual inventory of renewable resources,
- (b) Economic studies of probable markets,
- (c) Establishment of priorities among the various sectors, and the setting of objectives,
- (d) Public information and acceptance,
- (e) Approval and implementation of the plans,
- (f) Review of performance and consequent revision.

The provinces should be careful to appraise their own planning efforts and programs before approaching the federal government for large-scale financial assistance.

It was recommended by this Workshop that all governments take steps to create a national advisory council for the development of renewable resources, with a permanent professional staff. This council, as one of its first duties, should study the need for a national development fund to eliminate the present piecemeal approach to federal participation in resource development.



# INFORMATION-EDUCATION

Wednesday, October 25, 1961

"Imperfections in the legislative framework and administrative mechanism are not the basic source of weaknesses in (resource) management. The law grows from public concepts, which are the sum of individual concepts; and administration, similarly, proceeds in accordance with public desire. There is, however, often a serious lapse of time between the crystallization of new concepts in the public mind and their reflection in the statutes....To reduce the lag between public decision and official action; indeed, to speed the process of public decision, is the highly necessary function of positive leadership aided by effective information-education programs."

*D. A. Munro, "Legislative and Administrative Limitations on Wildlife Management," Resources for Tomorrow, Vol. 2, p. 868.*





# Introduction

At the planning conferences of the leadership groups, meeting jointly, it was decided that the two subjects for discussion, "Content of information-education programs" and "Reaching the public" were so interdependent that the two Workshops should meet as one group to hear the lead-off speeches and consider assumptions put forward by the leadership group. Accordingly, the Workshops were convened together, and later separated for more detailed discussion.

There was general agreement in both Workshops that the information-education effort in the past had not been sufficient to meet the need for public support of effective resource management. In seeking means to achieve better content and wider dissemination for information programs, many points of view were put forward. Although few of these were examined in depth, it became clear that certain opinions were widely held. In brief summary: resources information material, to be effective, must be presented in an interesting manner or, alternatively, to a captive audience; a variety of types of organization must conduct information-education programs, especially schools, universities, mass media and private organizations interested in resource use; information-education personnel require a high standard of training, with adequate attention to natural science, social science and the arts of communication; communication between government and people is a two-way process in which private local organizations might play a vital part. It appeared that one of the most important deficiencies felt by various organizations at the present time is the lack of a source of sound, well-presented basic information on resources, such as interpretations of scientific research and up-to-date information on current activities.

During the week, many other workshops examined the need for information-education in the solution of problems being considered. The following excerpts from workshop proceedings are indicative of the opinions expressed.

## *Urban Growth and Resources Workshop B*

There appears to be a lack of a central clearing house for the collection and dissemination of information with respect to air pollution. While many avenues have yet to be explored there does exist a substantial body of knowledge and literature which could be brought together and distributed to all directly or indirectly concerned.

## *Agriculture Workshop A*

The inability of farmers through lack of technical knowledge and desire to effect the necessary adjustments on their own.

The lack of proper training...for farmers and their families who may be required to move from agriculture to other occupations.

## *Water Workshop C*

The public is not clean-water conscious...we must educate the public to the need for pure water. It is a problem that knows no political boundaries; public education is needed before standards can be set and enforced. Better results are obtained from industry from education and co-operation rather than from coercion. Every means of communication should be utilized.

## *Wildlife Workshop B*

(Recommended that) educational authorities include the principles of wildlife conservation in teacher training schools and in school curricula.

## *Recreation Workshop A*

Information-education is of primary importance in the development of an adequate resources program.

There is a need for co-ordination of the varied recreational programs for non-government promotion of park development, and for exchange of information between government administrators.

## *Administration Workshop A*

(Recommended) the establishment of a clearing house for information on resource development.

## *Jurisdiction Workshop*

Governments are now so large, and so pervasive in their activities, that special measures should be taken to help the general public to find its way when seeking solutions to particular problems.

## *Management Workshop A*

(There is) lack of communication between different disciplinary and government levels. . . . It (is) necessary to have more efficient communication between and within disciplines, various levels of government, industry and the public.

## *River Valley Regions Workshop B*

(The group) generally agreed that it would not be enough merely to establish information-education

procedures as part of the organization but that where possible it should have built-in representation from the local area or region.

*Broad Economic Regions Workshop B*

The importance of adequately communicating the necessary information and concepts to the public cannot be overstressed, and in particular that the knowledgeable person too often speaks as if he

assumed knowledge on the part of the public which in fact it does not have. The great need for extension, leadership, education and people well-trained in this communication task was brought out.

*Forestry Workshop B*

The group felt that greater attention was required in educating the public in forest policies and that means should be studied to accomplish this work.



## *Information-Education Workshop A*

WEDNESDAY, October 25

To define the content of information-education programs that would be adequate in solving problems under discussion.

- Chairman: R. G. YOUNG, Assistant Deputy Minister, Saskatchewan Department of Natural Resources.
- Co-Chairman: W. A. MACDONALD, Director of Public Relations, Canadian Broadcasting Corporation.
- Lead-Off Speaker: W. A. JENKINS, Associate Director, Extension Services, Nova Scotia Department of Agriculture and Marketing.
- Discussants: JOHN A. LIVINGSTON, Managing Director, Canadian Audubon Society.  
O. M. McCONKEY, Former Professor of Field Husbandry, Ontario Agricultural College.
- Rapporteurs: GEO. MAHEUX, Professor, Faculty of Land Surveying and Forestry, Laval University.  
D. E. WADE, Supervisor, Conservation Information Service, Saskatchewan Department of Natural Resources.

## *Information-Education Workshop B*

WEDNESDAY, October 25

Reaching the public considered in problems under discussion with the necessary information-education material.

- Chairman: ALAN M. THOMAS, Associate Director, Canadian Association for Adult Education.
- Co-Chairman: BLAIR FRASER, Editor, Maclean's Magazine.
- Lead-Off Speaker: D. R. MONK, Director, Public Information, British Columbia Forest Service.
- Discussants: MAURICE SAUVÉ, Economist, Montreal.  
A. F. LAIDLAW, National Secretary, Co-operative Union of Canada.
- Rapporteurs: P. L. BREAU, Regional Supervisor, Fisheries Branch, New Brunswick Department of Industry and Development.  
W. B. BAKER, Director, Center for Community Studies, University of Saskatchewan.

*(The two Information-Education Workshops met initially in joint session to hear the two lead-off speakers and one discussant. Prof. Alan M. Thomas acted as Chairman of the joint session.)*

**Lead-off Speaker (Mr. MONK)**

Of all the myriad factors involved in resource administration in a modern democratic setting, the most crucial by far is the communication factor. The ultimate goal of resource administration policies must be the securing of public understanding and participation at a minimum cost in terms of political, scientific, or administrative compromise.

It is questionable whether an optimum resource administration policy is of any real value at all if the Canadian public will not accept it, or will accept it only after the policy has been so compromised and distorted as to end up but a shadow of its original design, accomplishing few or none of its objectives. I am sure we are all aware of this sort of thing happening time and time again in our own particular resource field.

Those engaged in information-education activities operate as a catalyst in the hypersensitive area between those who plan natural resource use policy and the final judges and arbiters of that policy, the public. Information and education personnel are well aware of the fact that proper communication programs integrated into the very sinews of resource use policy planning and implementation make the difference between successful execution and some degree of failure.

Communication is one of the least perfect yet most widely used of all the disciplines of modern society. An appreciation of its proper application, its strengths and weaknesses, is of fundamental significance to those charged with implementing public policy in today's democratic environment.

No longer will society automatically "obey the king." More and more will society be led only by its own consent. Lack of a coherent, widely held objective can easily lead to a form of anarchy where comprehensively planned resource programs default to the individual will.

Inherent in the responsibilities of all those connected with resource use in Canada, where our great natural wealth is predominantly publicly owned, is the moral obligation to inform—to positively reach out to all our various publics at language levels they can understand. Our immediate purpose is to provide our various publics with criteria upon which they may base logical value judgments. In order to achieve this primary purpose, I. and E. activities must be accepted at the top administrative level as the tool essential to successful implementation.

Before I go on, I should define what I mean by "resource management." To me this means multiple

use or integrated use of our natural resources to assure the highest average benefit for the majority of the Canadian people over the longest possible time. I like to think of it as a dynamic concept rather than a static one; as utilization rather than preservation; as a method seeking the highest possible degree of land use on each acre—uses which could range from the protection of historically valuable sites to the maximum use of the smallest branch of the biggest tree.

Fundamentally, man is motivated by self-interest. In the field of public resource management, man, the individual, is being called upon to support measures and policies categorized as being "in the common good" rather than "in the individual good." His first reaction will therefore be one of resistance, the degree of which will vary in ratio to the degree of personal involvement in the policy concerned.

Yet the public knows instinctively that its resources should be administered "in the common good." It pays the salaries of resource department personnel in the belief that the best people to plan and carry out the work are those specially trained to do so—foresters, agrologists, biologists, engineers and so forth. At the same time, the public will only gracefully accept change in policies when it is persuaded, in the way it likes to be persuaded, that the change is good on the basis of its value criteria. In other words, the public sets the pace of change, and resource management departments can only lead to the extent that the public agrees it should be led, unless the departments are willing to accept heavy costs of change.

The only way resource management policies can advance without these heavy costs is through high caliber, comprehensive, two-way information and education programs—the catalysts in that mystic region of transfer between what the resource manager knows must be done and what the public agrees it will let him do.

Now, before turning to an examination of the problem assigned to this Workshop, I think we all should acknowledge a great debt to Fraser Symington and his associates in the Secretariat, who prepared the I. and E. Background Papers and subsidiary material. So far as I am aware, this is the first time a critical analysis of resource information and education activities and facilities has been made in Canada; it is the first time a national approach has been made to the field on anything but a "publicity volume" level; it is the first time the complex problems and responsibilities attendant upon this crucial work have been spelled out for all to see. We know that lack of data prohibits complete analytical surveys in depth, but a beginning has been made.

I would like to see this invaluable background material serve as the starting foundation for a pro-

gram of annual reassessment of I. and E. activities across the country so that all those engaged in the I. and E. field as well as all other resource management personnel, could be kept informed of progress and improvement.

A study of the background material points up in no uncertain terms that in the field of resources, I. and E. activity is beset by eight major deficiencies or problems common in varying degrees to all resources and from Atlantic to Pacific.

Essentially these deficiencies seem to fall into two broad categories—organizational and functional. Among the organizational deficiencies are:

1. A general lack of definition and status for I. and E. work within departmental hierarchies.
2. Obscure definitions of functional and jurisdictional responsibilities among the various types of information agencies.
3. Meager budgetary provisions for I. and E. work.
4. A general lack of professionally skilled I. and E. personnel in resource work across Canada.

Under the functional category we could list:

1. An almost complete lack of any *feedback* process for assessing program effectiveness.
2. General refusal of administrations to allow I. and E. to function as the vital planning and implementation tool it is, and a tendency to restrict I. and E. operations to "fireman" functions.
3. The persistence of the outdated publicity approach to I. and E. on the part of administration.
4. A lack of liaison with the universities for the purpose of modernizing their resource curricula in order to include, with proper emphasis, material which would increase the sensitivity of their science graduates to the profound significance of I. and E. in their professional careers. Most scientists do recognize the need to publish papers in order to achieve professional recognition. More and more they are realizing that the publishing of popular material is equally essential to the achievement of their practical goals.

It doesn't take much study to realize that most of these deficiencies are interrelated, that they are far too fundamental to be classified simply as shortcomings, and that they are, to a large extent, manifestations of a basic incompatibility between those engaged in I. and E. activities and those in the areas of policy formulation and research. There are indeed profound cleavages between those who deal with the traditional natural resources and those whose profession is directed toward influencing the most important and unmanageable of all our resources—the people of Canada.

The very fact that these two groups are clearly identifiable and that they at least appear to be in

juxtaposition to each other, is a manifestation of the underlying hidebound attitudes toward resources and the function of the public in their management. Indeed this may well be the crucial element behind this whole Conference. Only by insisting that these attitudes must change and by indicating some methods of achieving this change can I. and E. hope to be integrated into resource management planning and execution. The public must be given a greater opportunity to participate actively and intelligently in the management of its own resources and thus the shaping of its own destiny. Canadians must be better informed on the basic issues of integrated resource use and their resource managers must be fully cognizant of the public will. Only through sustained, comprehensive, two-way I. and E. programs can this be done.

If this is a valid assessment of the problems facing I. and E. personnel, then it profoundly affects our approach to the workshop problem, "Reaching the public considered in problems under discussion with the necessary information-education material." There are two key words in the problem, namely, *reaching*, which denotes to me an activity, a formalized activity, a comprehensive, integrated programming of a continuous dynamic function; and what should read *publics* rather than the singular, because only through the recognition of the existence of a variety of *publics*, each requiring specific techniques and each reacting on the basis of its own value criteria, can any intelligent attempt at research and evaluation of I. and E. programs be made.

Thus we must return to an examination of the facilities available to sustain such a function as "reaching the publics." This brings us up short in the face of the first three organizational deficiencies—lack of status in departments, lack of defined functional responsibility, and lack of funds. The first of these—the lack of status—appears to me to account for the other two, indeed for all the others to varying degrees.

I am satisfied that if this Workshop accomplished nothing else, it would be making the most significant contribution possible if it could produce suggestions leading to a formula by which the status of information and education activities in the resource departments could be established at the only functionally intelligent level possible—as a staff division to the top departmental policy-maker. Lacking professional status in basically professional departments, I. and E. personnel have a primary responsibility to educate the departmental policy-planners in the value of I. and E. programming.

It is my feeling that only through demonstrated practical value to the line or operational branches of the departments can I. and E. hope to gain the functional status in the eyes of the department, status



that is essential before any improvement in hierarchical structure can be realistically expected. I feel this is a matter of primary importance for discussion by this Workshop.

Operating as we do in a professionally-oriented setting, I. and E. personnel should make every effort to establish professional standards of performance in all their undertakings. A system for the internal policing of standards might be suggested as a valid reason for the establishing, as a result of our discussions here, of a professional society of resource information personnel across Canada with stringent practical criteria for membership and a system for annual or continuous examination of standards. An indication of some of these criteria are to be found in the Background Paper. An initial undertaking for such a society might be the assessment of this "Resources for Tomorrow" Conference from an I. and E. standpoint and the production of guides for improvement for the consideration of those concerned with the organization and promotion of future resource conferences.

In concert with the organizing of such a society, or separately, steps should be taken to approach the universities across the country to encourage the adapting of resource curricula to provide practical and academic knowledge not only of resources but of the vital significance of I. and E. to modern-day resource management. It is possible such organizations as the Canadian Association for Adult Education could provide valuable assistance and guidance in this area.

Across the country there are many privately sponsored information organizations which have contributed much to the thinking in the resource field. Unfortunately, the so-called realities of economics and politics have resulted more often than not in a narrower definition of objectives by these private organizations than is desirable in the light of today's conditions, leading to mere publicity functions designed to promote a single or restricted point of view. Possibly these organizations could be assisted in doing a more comprehensive job of true public education if they could meet regularly with government resource policy-makers for consultations. By this I do not mean that forestry associations would meet with government foresters alone, agriculturists with agriculturists, but rather that an annual council of resources be held at which only key representatives of all these various resource groups would meet with government representatives from all resource departments.

I also think there is much to be said for the suggestion in the Background Paper that consideration be given to establishing a national resource information/research organization for the purpose of maintaining flows of up-to-date resource data and

analyses of their significance economically, socially and technically to the resource departments of all provincial governments and the federal government. This type of organization has many obvious advantages and, just as obviously, many pitfalls.

In general and in summary, I suggest the time for revolution is at hand. It is a time for dedication to high purpose, self-discipline and challenge for all those of the I. and E. persuasion. We must put a stop to our tendency to bumble along, hobbled and hindered by the protestations of special-interest groups on the one side and the pretensions of narrow publicists on the other. We must face up to the existence of pressures that lead to distortion or suppression of information.

It is time to think of overturning the old order, the old attitudes, the old jealousies. It is time to strike out boldly seeking solutions to ensure the development of I. and E. and resource management classes at universities and normal schools, through gradual curricula modifications; the establishment of hard-hitting and able provincial government I. and E. agencies; the establishment of a national agency or regional agencies; the establishment of a national group for liaison with private resource organizations; the professionalizing of I. and E. personnel and the general raising of their status in resource departments; all aimed not at gaining public compliance to policy or to the development of pressure groups promoting a "preferred use" attitude, but aimed at broadening public comprehension of the great basic issues underlying the vital field of multiple use resource planning.

To do this we must resist the temptation to discuss individual techniques in detail. Rather we must concentrate entirely on those larger areas, the big basic areas of deficiencies, in an attempt to make tangible progress toward solving the problem of "reaching the publics."

#### **Lead-off Speaker (Mr. JENKINS)**

This Workshop is charged with the responsibility of defining the content of information-education programs that would be adequate in solving the problem with which we are faced in this Conference.

Before attempting to summarize or reiterate the major problems that are presented in the Background Papers, we should perhaps stake out some parameters within which we propose to work. Thus, I submit the following basic assumptions for your consideration:

1. There is no paucity of technical information for the optimum use of renewable resources in Canada; the principal deterrents are of an economic and social nature.
2. Engendering a positive, intellectual climate toward the proper utilization of resources is a

major responsibility of information and education people.

3. The importance of any resource or its proper use will vary from place to place or from time to time.

Thus, *conservation* must be interpreted in terms of a place, a time, and the particular interest and attitude of the people involved. If we accept the definition from the Harvard Land-Use Seminar we would say that *conservation* is the rate of using resources over a socially determined time period that will minimize the *volume* of inputs necessary to produce the outputs to meet the demand predicted for that time period. If one wishes to assume further that markets are perfect, in the economic sense, then *conservation* can be defined as that rate of using resources over a socially determined time period that will minimize the *cost* of inputs necessary to produce the outputs to meet the demand predicted for that time period. Further, I would define a resource as a physical good or force having a predictable human use. Thus when we talk about the conservation of renewable resources, I hope we can agree that we mean the optimum rate of using these physical goods or forces over a certain time period. The point to be brought out here, of course, is that proper utilization of resources is a flexible and not a static principle.

Within this framework of assumptions then, what are the responsibilities for information and education agencies in a program of resource development? It would appear to me that these are threefold.

1. Provide support to, and an explanation of, legislation relating to the resource field.
2. Influence the degree and kinds of resource use by drawing attention to possible alternative uses.
3. Offer basic information and interpret research so that people can make rational judgments in the use of resources.

### 1. Theoretical Considerations

In planning for the more rational use of renewable resources I would submit that information and education people should be well acquainted with two concepts frequently employed in the Harvard Land-Use Seminar. The first of these is the Planning Unit which is derived from the theory of the firm or operating unit analysis. The Planning Unit may be defined as an institutional organization whose function is to plan the development of individual operating units to meet defined and limited objectives. An Operating Unit may be regarded as an aggregate of land, labor and capital under the control of a decision-making manager or managing body. In this sense it may be a farm, a factory, or in the vernacular of economics, a firm.

The concept of an Operating Unit would not be

extended too far by embracing municipal councils, school boards, fish and game associations, federations of agriculture and the like. A union of these Operating Units is the basis of a Planning Unit. A Planning Unit then is an *ad hoc* arrangement set up to meet and resolve a specific problem. An important feature, and indeed the chief, characteristic of a Planning Unit, is a fact that it places emphasis on local participation and involvement. The Planning Unit attempts only partial solutions; goals change as the planning progresses. I submit that the responsibility for bringing the Planning Unit concept into the planning process rests with information and education people. In summary I suppose these Planning Units would perform functions similar to those of interagency committees. Yet, in the sense that we have used them here I think they are somewhat more formal in structure, more precise in objective and deeper and wider in involvement.

Whenever a Planning Unit makes a selection of alternative courses of action, a budget must be constructed. This is the second theoretical concept to be considered. The budget is used to array the anticipated costs and returns for the various alternatives so that a plausible selection can be made by the Planning Unit. The point to be noted is that, even when intangibles are considered, while the cardinal schedule of values cannot be measured precisely, some degree of ordinal ranking is possible and this will provide guidelines for establishing priorities among various alternatives. Moreover, and this may be its major contribution, the budget serves as a very useful educational device in defining the problems of the Planning Unit and in indicating the kind of information that will be required for alternate courses of action. Thus, any wise decision will usually be preceded by an accurate and comprehensive budget.

The schematic framework of the budget technique is constructed around the economic theory of marginal analysis. Applied to a single firm producing a single product, the principles of this theoretical structure dictate that optimum output occurs by producing up to the point where the marginal cost equals the price of the product or the marginal revenue depending upon whether the market is considered as perfectly or imperfectly competitive. These principles also denote that the most efficient combination of resources of a firm takes place when each input is used to the point where the marginal product of the last dollar spent on it is equal to the marginal product of the last dollar spent on any other input factor.

I think it is important that we, as information and education people, have a thorough understanding of these concepts and that we be prepared to bring them into play at every opportunity.



## 2. *Comments on the Background Papers*

I would like to introduce this section with the view expressed by W. Arthur Lewis and developed in the paper prepared by Professors Baker and Solomon. After studying the cost-benefit implications of research and extension education in United States, Professor Lewis concludes that the investment in extension work is the most profitable one that agriculture can make. This is reiterated throughout the present Conference.

I think this idea is an important foundation upon which to build the discussions for this Workshop. I say this because I sense that, sometimes, information and education people are not always as resolute as they might be in procuring funds for their work. Much of this, of course, derives from the fact that the end results are somewhat unmeasurable and therefore perhaps it is more difficult to justify public expenditures in this direction.

Continuing now with the Baker and Solomon paper I see no particular argument with the six principles that they set forth. One caveat that I would throw out though, is in connection with their strong emphasis on Regional Centers for training extension people and for their suggestion in connection with Extension Educational Departments for each of the universities. I would submit here that one strong national center for training information and education people in all the resource sectors might better do the job that we have in mind. What I visualize here is something like the Land-Use Seminar at Harvard University to which earlier reference was made. This Seminar affords an opportunity for resource specialists to do graduate work on a broad base and the diversity and geographic distribution of the group are some of its strongest features.

This same paper underlines the disadvantages of having the provincial extension services separate from the federal research branches. I would agree that the research and other information coming out of the activities of the federal government has no clearly defined channel through which to reach the farmer for whom it is designed. I would raise the question with the authors whether provincial governments alone could finance a proper agricultural extension system. I think it is fair to say that provincial agricultural extension services are neither equipped nor adequately financed to perform the kind of job that needs to be done in the agricultural extension field. However, with the organization of personnel that these agencies now have plus federal assistance by way of research and finances, they might well give valuable support to federal programs.

If this argument is accepted for the agricultural sector then it would seem to me that it holds *a fortiori* for fisheries, forestry and the other renewable

resource sectors. I think we can all agree with Laidlaw when he says that there has not yet developed the same kind of relationship between government and fishermen as has obtained between government and farmers. I think this same general concept can be carried through to forestry and the other resource sectors of our economy.

It must be recognized, however, that the development of any kind of a co-operative service will call for a great deal of thoughtful negotiation and careful planning between federal and provincial governments to ensure that provincial rights are adequately protected and that federal funds are effectively used. It might also be argued that it would be more economical and certainly more effective for the federal government to channel financial assistance through provincial extension services rather than to set up its own special agencies as it has already done in the case of the P.F.R.A. and more recently with the Farm Credit Corporation. I am not sure that I comprehended this correctly but I am afraid that the Honorable Alvin Hamilton, on more than one occasion, has implied that the rural community development aspect of the Agricultural Rehabilitation and Development Act would be administered by federal officers. I hope I have misunderstood him on this point.

Throughout all the papers there was a fundamental principle established that an educational agency could not effectively do its work and, at the same time, be loaded with administrative or regulatory functions. This is an important point and it applied, I think, particularly to the fisheries and the forestry sectors. In my own province of Nova Scotia, I know that forestry men have some difficulty in prosecuting a man one day for a violation of the Small Trees Act and on the following day trying to approach the same man as a teacher, counsellor or advisor on proper woodlot management.

Running throughout the Johnson and Holt paper there is a strong and dominant thread emphasizing the legislative aspects in bringing about better utilization of the forestry resource. While these authors admit that education and research are needed they hold to the argument that these methods will be too late and too little, unless they are supported by a vigorous control program through legislation. I suggest this is a problem that this Workshop should resolve. To what extent will education do this job? How far can education go? When will it be necessary to resort to legislative procedure? It would seem to me that a basic principle might be established here for all the resource sectors.

I think we can all agree that agriculture is the favored child among the resource sectors in so far as education and extension are concerned. Certainly in terms of the job to be done in information, extension and education the other resource sectors are



terribly neglected *vis-à-vis* the emphasis that is given to the agricultural sector. Laidlaw suggests that there should be an Atlantic School of Fisheries on the eastern seaboard. I could not agree with him more, but I trust he is not thinking about an institution to take the place of a National Training Center for Extension and Education in the resource sectors. I certainly think that we need an Atlantic School of Fisheries to improve the educational level of the fishermen and to develop a research and extension program for the fishermen, the marketing and processing people, as well as the consuming public. However, I do think that if a National Training Center were established for personnel in resources education that fisheries officers would form an important segment of the student body of such a school.

In the recreation sector, I would agree that political leadership has not played the role that it should have played in the past in alerting people to the real nature of the park problem; it is also true that the public's expression of its requirements has frequently been less than adequate. However, at the same time I would hope that we in Canada would take a lesson from our neighbors to the south and make specific plans for the establishment of parks and proceed in this direction on some sort of a directed program.

Along with education on park development I think our city folk and the public at large need to recognize that wildlife is an important part of the land community and certainly wildlife should have consideration in all land use programs. In this connection I would agree that wildlife must be considered for its aesthetic as well as its economic values.

#### Discussant (Mr. LIVINGSTON)

Probably the most useful thing a discussant can do at this time is try to widen our frame of reference, just a little. As I see the renewable resource picture, there are more people involved than government administrations and extension departments. The whole of the Canadian public is involved, and I think we should begin our deliberations with that in mind. Let's create a healthy, loyal opposition.

In my view, the sole purpose of information and education activity, really, in resource management, is to bring about a drastic change in our fundamental attitudes toward renewable resources. I was quite disturbed, actually, by the almost complete orientation of the first day's papers to the economics and technology of resource exploitation.

We have to correct this dislocation in thinking before it pervades our entire educational structure. I call it a dislocation because, as I see it, the job of information and education at all levels is to build public understanding of man *in perspective*—man in a dynamic environment—man as a part of nature

and subject to natural laws. Successful resource management will be an application of this understanding.

Well, you'll say, that's just wooly idealism, and anyway it's easier said than done. But one obvious prerequisite is that information and education communications, from whatever sources, must cut across lines of administration, special interest, special technique. And through some structural development that we might even rough out here, we must reach *every* interest, *every* discipline, *every* administration and *every* citizen with the essential, basic truth of resource interdependence. The interdependence of resources, after all, is reflected in the interdependence of all users, both special users and the public at large.

One of the first steps in reaching this rarefied ideal, this broad approach to information and education, may be somewhat difficult at first. All of us—educators, special users, administrators—simply *must* take off our blinkers and have a good long look around. In our intense preoccupation with our particular interest or discipline, I submit that every one of us runs the risk of self-mesmerism, which as you well know can result in a dangerous insulation against outside influences.

So, if we are going to take the broad look, and acknowledge, and carry out in practice our acknowledgment of our own interdependence, what do we do then? What are our responsibilities? We, the information and education people, are responsible for raising the level of public understanding of the principles, and the shifting needs, of intelligent resource management. By the way, I equate resource management with human survival—not merely with economics.

We are also responsible for raising the level of content of mass-media communications having to do with renewable resources. We should make better use of the mass media than we do. All of us in this room are responsible for these general advances. Some of us are responsible for more particular advances, and I have in mind here the role of special interest groups, the role of adult education organizations, and the role of healthily financed private conservancy groups both as critics and translators of resource management policies. And, of course, there is the role of extension, sadly neglected in some areas.

I think universities have a terribly important responsibility. Government and industry, by the way, have the opportunity to assist in this. First, there *must* be chairs of resource management, or conservation—call it what you like—in Canadian universities. Also in the universities, there is a vital job to be done, a crying need to build up a cross-reference between disciplines. Nothing could be more important than that. But how are we going to plan and organize resource information and education

programs right across the board? How are we to bring about general enlightenment without being hampered by artificial hinderances? How in the world can we cut across political lines, resolve conflicting traditions, bring together divergent disciplines, integrate competitive interests, make the best use of established institutions and established techniques? I don't know that, but I would suggest that we might make a start by trying to communicate with *each other*.

Information and education activity *must* be uninhibited by custom and circumstance, and it cannot be pigeonholed in an administrative hierarchy. It must pervade all levels of government and private affairs.

As Mr. Jenkins has pointed out, its purpose is to

engender a positive intellectual climate—in Mr. Monk's words, a broadening public comprehension of the basic issues in resource planning. Let's start here and now. And let's not stop at the end of this Conference. A continuing interchange of information between ourselves, and certain basic standards of operation, are going to be vital from now on. Mr. Monk has given us a lead in this direction by his emphasis on professionalism in information and education, and I think we could profitably explore that, in some detail.

In doing so, let's never lose sight of our common interrelationships. Let's keep the blinkers off.

## DISCUSSION

### *Assumptions*

Seven assumptions, previously prepared by the leadership groups of Workshops A and B were presented by the Chairman for consideration by the groups, as follows:

1. The I. and E. function is indispensable to the proper concept of management of renewable resources. Only by associating this function with policy making can the citizens and responsible organizations participate in effective management of resources.

2. The I. and E. function must be understood by administrators in general, and it must be carried out by individuals with a knowledge of and preferably training in the social sciences and humanities, and with, as well, a grasp of the problems of resource management.

3. Effective resource management requires a change in the attitudes and behavior, with regard to renewable resources, on the part of the people of Canada. Existing agencies of information and education must be strengthened and other agencies and methods must be created.

4. Means must be provided to assist the existing I. and E. agencies in bringing about the required changes in attitude and behavior. An agency or agencies must be created to provide clearing-house and co-ordination functions with respect to this concept. This includes the provision of workshops and meetings for leaders in formal education, the mass media, and industry.

5. All avenues must be exploited for the communication of technical information regarding the use of renewable resources.

6. The modern concept of resource management requires some changes in the present organization of I. and E. facilities in Canada. It requires:

- (a) New organizational structures developed according to experience with agricultural and other well-developed forms of extension;
- (b) Facilities for the study of communication processes; the development of methods for assessing change in public opinion in specific cases;
- (c) The development of standards, criteria, and training procedures for I. and E. personnel associated with resources agencies.

7. Any concept of a National Resources Council must include means for the study and support of the I. and E. function.

Reservations regarding assumption number five were expressed, on the ground that technical information was not the prime requirement, and that attention to this point might detract from consideration of the more urgent requirement for general public information on resource management. Subsequent Workshop B discussions indicated that assumption number five was not acceptable. General agreement in principle to the other assumptions was indicated by both Workshops.

The Workshops separated at this point.

## WORKSHOP A DISCUSSION

It was pointed out that the assumptions were largely directed toward governments and government agencies and organizations. Nevertheless, the assumptions were generally applicable to any organization concerned with an aspect of renewable resources. Any action undertaken on assumptions must be done in context of economic circumstances.

There was agreement that the information and education procedure should be of a non-political nature. However, the processes of "feedout to the publics," interpretation to management, and the "feedback from the publics" are of a political science nature.

The question was raised: "How does a widely-spread agency work out information and education functions?" An answer was: "Through all persons in the agency accepting the information and education function as an integral part of the agency structure. Information and education must be associated intimately with inception and execution of policy."

Any renewable natural resources agency has four basic functions: (1) inquiry or research, (2) implementation of program(s), (3) informing people concerning the nature of the resource base, and (4) providing recommendations for management. There was unanimous agreement that a well-informed public is capable of making or insisting on good decisions.

A point reiterated in many ways during the discussions, was that the information and education function is largely an *abstract* function, although there are known tools and methods, some of which are highly developed. The Workshop group agreed, for example, that the *"Resources for Tomorrow"* Conference was largely an *information and education function*. An important point brought out, following a discussion of periodical provincial and national conferences, was that *each agency must know what other agencies are doing*. Then, appraisals can be made and some degree of agreement and useful interchange reached.

Agreement was reached on several guidelines:

1. Information and education efforts are directed largely at uninformed or partially-informed publics.

2. Since these usually uninformed publics are the objective of information and education efforts, several interrelated problems were discussed:

(a) How to arouse interest? *Guideline:* There is a need to determine effectiveness of various information and education approaches in order to gain more efficiency.

(b) How can technical information best be conveyed to those sections of the public already active in the field of conservation of natural resources? How can more people be trained

to do this sort of work? *Guideline:* There is a need to determine what the avenues of approach are to more effective dissemination of conservation materials and concepts. Many examples covering mass media and more specific educational media were brought out by the Workshop participants.

(c) How can the large formal school groups best be reached with the complex subject matter of resource use and management? *Guideline:* Some materials require rewriting or popularizing. *Guideline:* There appears to be a need for strengthening liaison between information and education groups and formal education groups.

(d) What are some workable methods of determining needs of various segments of the public for information and education? How can information be channelled effectively among all agencies and organizations at all levels?

A general guideline was developed by the group. It was felt that inventories of information and education facilities, abstracts of publications, films, slides, tactile aids, exhibits, organizations, and potentially useful groups and persons should be made on provincial and national levels. Such efforts should be standardized and the results published nationally.

The procedures and publications of the British Columbia natural resources conferences were briefly discussed. A recent "popularized" book on British Columbia's resources by R. Haig-Brown was thought to be of value in formal education.

The Ontario Conservation Council was discussed at some length, with emphasis on the large number of individuals and organizations represented. It was noted that the Council was undertaking special studies directed to the cabinet level of the government. The Council was providing both a sounding board for various interests and a co-ordinating function. Information and education functions can be accomplished most effectively in such an integrated situation. In piecemeal efforts, the information and education function is usually difficult.

There was agreement that through properly constituted provincial councils, worthwhile integration can take place, allowing all bona fide interests in renewable natural resources to work toward formulation of policy.

There was strong feeling in the Workshop group that provincial and sub-provincial councils can establish proper avenues of communication, which can develop into regional or national meetings.



Some specific comments put forward during workshop discussion included the following:

1. There is need for provincial surveys to determine what resource teaching programs are underway in formal education institutions.

2. Exhibits with stronger viewer participation should be developed.

3. There is need to establish natural resources liaison officer(s) to work with the National Film Board. Perhaps machinery already exists and needs redevelopment and publicity. Also, there is a need for the N.F.B. to produce more TV shorts and travelling exhibits.

4. The work of the British Nature Conservancy is worthy of study.

5. Television provides readily exploitable opportunities.

6. Camping (organizational and family) is a relatively unexploited field for developing interpretive programs and devices for application in the field.

7. In exploiting "See Canada First" programs, some refinements and new twists are needed to emphasize the use and management of renewable natural resources.

8. Such fields as sociology, economics, and political science, should be examined periodically for the purpose of improving conservation information and education functions. The important, basic role of the family was used as a precise example.

9. There is a definite shortage of films directed toward young people on various natural resources topics.

10. Agricultural extension should include more attention to resource use in all sectors.

A brief prepared by the Alberta Fish and Game Association, "A Plan for Conservation Education," was submitted to the group.

The group endorsed in principle three specific recommendations of the Tuesday Wildlife Workshops:

1. That conservation subjects become a *credit course for teachers* in Canada and conservation sections of school curricula be given their deserved emphasis.

2. That more and better circulation of scientific papers relating to resource management be

achieved through federal subsidy, and that interpretation and simplification of these documents must be the principal aim of the national information and education policy.

3. That an inventory be made of Canada's resources in people skilled in presentation of resource management education and information, including people active in the audio-visual field, with a view to fully utilizing such skills.

Part of the joint leadership group prepared the following statement subsequent to the formal meeting:

Both Information and Education Workshops, in presenting certain assumptions and guidelines for action in the field of public information and education respecting renewable resources, failed to discuss one important question, namely, "What are the consequences if these guidelines are ignored?"

If the information and education assumptions are generally not accepted and if resources administrators ignore the information and education function in management and planning, will not Canada's resources development continue to be piecemeal, compromised and uncorrelated, as it has been in the past? And will there not continue to be need for the public to extend its areas of acceptance of resources policy changes?

Many of the assumptions and guidelines accepted by the Information and Education Workshops were concerned with the growth of a "public conscience" which would encourage less destruction and abuse of renewable resources and the capital facilities related thereto. Would holding in abeyance the implementation of the information and education function not lead to greater abuses in time to come?

Other information and education guidelines had definite purpose: the desire of people to be given a greater voice in the matter of control and management of renewable resources. If the information and education suggestions are not implemented, will people be discouraged in meeting their democratic responsibilities regarding an important area of public interest? And, will an important learning process be impeded by denying people a chance to be actively involved in influencing public policy conception as far as renewable natural resources are concerned?

## WORKSHOP B DISCUSSION

The question of objectives of information and education programs was raised. The opinion was expressed that there was not enough concern with the public interest.

Resource users (exploiters) need the co-operation of an informed public, and the public needs informa-

tion in order to protect its own interests as regards water and air pollution, recreation facilities and the like. Companies may pollute water, but vague sentiments about "what ought to be" are futile. A public function for control must be exercised, or competition may make it difficult for any company alone to act

in the public interest. Management's problem is complying with principles of sound resource use in the absence of collective agreement. Laws merely codify public opinion. Information and education can create an atmosphere for more complete understanding.

Emphasis was given to the need for two-way communication involving people at the local level. A public sense of proprietorship in the resources was urgently required. Vandalism and irresponsible exploitation occurred when the individual failed to develop a sense of ownership. (Atlantic region fishermen destroy the lobster industry because they have no feeling of ownership.) Participation by people was required, not the "engineering of consent" by means of propaganda. A specific point was raised: the farmer has control of a resource needing conservation. Some steps toward achieving better land use might be against his immediate individual advantage. The expert must do a better job of presentation: the farmer needs to be "sold" in his own language and by familiar techniques.

The proposition was put forward that there should be means of assessing how sportsman's organizations can carry out the information and education function. Voluntary organizations with local ties provide the best information-education medium. (Poachers have been turned into conservationists through the activity of voluntary organization.) How, with this admittedly imperfect instrument, can the information and education function best be carried out? Agriculture extension provides some examples of how to do the job.

The role of the voluntary agency needs definition, and there is need for balance between public and voluntary agencies.

Against the background of this discussion the purposes of information and education were defined as:

1. To supply information satisfying the public's wants and needs.
2. To provide technical information to special groups.
3. To develop public interest and knowledge in the whole resource field as support for legislation.
4. To guide and to some extent control public use of resources—especially use of resources for recreation. (The millions of users can be directed only through information and education methods; enforcement is of limited usefulness.)

Organization for more effective information and education programming was discussed. It was stressed that non-government agencies were essential. Effective information and education required dissemination of unpleasant as well as pleasant facts.

An outline of required institutions and their role was put forward as follows:

There is a vital role in the field of resources in-

formation and education for several types of government and private organizations. Further study should be given to the role of existing agencies and organizations, and to new agencies and organizations which may be established to fill gaps. Some of the agencies, whose roles require clarification to prevent overlapping and to make most effective use of faculties and facilities, include:

1. Federal government agencies which may undertake resource information programs on their own or in conjunction with provincial governments.
2. A proposed federal or national council which might co-ordinate and support resources information activities of provincial governments and of provincial resource councils.
3. Provincial government agencies, including departments of renewable resources, education, tourism and central information agencies. In this connection a need was noted for interdepartmental committees to co-ordinate activities of all government agencies.
4. Proposed provincial councils representative of voluntary organizations, government and industry.
5. Provincial voluntary organizations such as fish and game associations, industrial councils, agricultural associations, natural history societies, etc.
6. Universities, foundations and other educational and specialized institutions.

Several participants cautioned against establishment of new institutions except where real need could be demonstrated.

The following recommendations were noted as having some general support:

1. There should be established in each province an agency for the purpose of:
  - (a) Collating, co-ordinating, and disseminating information and education material with respect to resources and their multiple development;
  - (b) Undertaking programs of information and education in this field;
  - (c) Co-ordinating the above activities with those that may be undertaken by the proposed National Resources Council.
2. Such provincial agencies need to be representative of the various resource interests and agencies; government, industry (including agriculture and other resource industries), universities and voluntary groups, as well as of the general fields of education, extension and information.
3. So that the information-education function may be intimately associated with policy formulation, consideration should be given to making the provincial education-information agency (1 and 2 above) an integral part of whatever provincial agency, such as a Provincial Resources Council, is

given broader responsibilities (research, co-ordination of programs, etc.) in the multiple development of resources.

The Conservation Council of Ontario was cited as an example of effective organization. The Council is a private, non-political organization whose objectives include public information on renewable resources. It has a membership of seventeen renewable resources organizations representing all resource sectors including community and town planning organizations. Two senior provincial resource department men attend Council meetings, in order that Council deliberations and plans may be developed with an understanding of the government's viewpoint, and that information flow to and from governments may be improved. The Council has an important role in placing the recommendations and viewpoints of its members before the government and public. It is capable of ensuring that recommendations are responsible, representing carefully considered viewpoints that are compatible with the over-all requirements for resource development in the interest of the province and its people.

The role of public information media (newspapers, magazines, radio and TV) was discussed. It was pointed out that outdoor writers have been "in the wilderness" for years—without access to diverse, concise, authoritative information on resources. The opinion was expressed that writers generally do not have access to information possessed by governments. There was some disagreement with this. The general consensus of the Workshop was that public media could work to much better advantage if provided with better basic material on resources, and if the press had the confidence of governments to a greater degree.

Further discussion centered around the role of government. Pamphlets are useful to provide information to those already interested. To arouse interest is much more difficult. The mass media writers are essential for this, and should be fed with suggestions and material, as should key individuals and organizations, e.g. scouts, guides, natural history societies, fish and game clubs, park superintendents, service clubs, etc.

Formal education which included adequate attention to resources was essential. Out of the attitudes of diverse ethnic and regional groups must be developed a national sense of values about resources and an understanding and appreciation of the national interest. Resource education should start in the primary schools.

Teachers need specific information on resources. The Nature School of Science, Toronto, seems most useful in bringing urban children into contact with resources. Camping and instruction in parks are other means of bringing teachers and pupils closer to nature.

Development of professionalism in information-education was discussed. Two main points arose: (1) That scientists and administrators should, as part of their professional training, gain a knowledge of the communications process and, (2) That specialists in resources education should have knowledge of the social and natural sciences and be skilled in the arts of communication. This should apply to school teachers as well as information and education personnel. Both categories should understand the interrelationships of all resource sectors and scientific disciplines and carry out their public information function with this in mind. Information sharing among various agencies is of vital importance. As more regional planning is done, co-ordination of various specialized educational roles will be essential. This would include development of local participation in planning and execution.

The possible role of universities in training resource information and education personnel, and stimulating community action was discussed. Universities are neutral with respect to government. They have extension facilities. They are able to adapt established courses to meet the need, or if necessary, establish cross-discipline courses such as the conservation courses and scientific interpretative writing courses established in some United States universities.

It was generally felt, however, that the addition of a few undergraduate courses would not meet the needs of those who were developing careers as information-education specialists. The focus here should be on postgraduate courses in the social sciences and the communications sciences.



*Workshops*

*Thursday, October 26, 1961*



# URBAN-CENTERED REGIONS

Thursday, October 26, 1961

“The stage for regional planning does not have to be devised; it has to be discovered. It is something elusive because it is the product of an evolutionary growth, more or less advanced in various parts of the country. But the main point is that the basic trends of population distribution, and of the underlying economic, social and technological factors are tending to produce *organic* regions in the sense of distinct social entities with interdependent parts connected by transportation and communication systems, and sharing a common life and destiny. This kind of area assumes the character of a *regional community* which is in itself an important foundation for effective regional planning.”





# Urban-Centered Regions Workshop A

Thursday, October 26

Controlling the impact of urban growth  
on resources.

- Chairman: E. G. PLEVA, Head, Department of Geography, University of Western Ontario.
- Co-Chairman: P. DOBUSH, Royal Architectural Institute of Canada.
- Lead-Off Speaker: H. CARVER, Chairman, Advisory Group, Central Mortgage and Housing Corporation.
- Discussants: GUY LEGAULT, Office of Director of Planning, City of Montreal.  
R. N. GIFFEN, Associate Planner, Edmonton District Planning Commission.
- Rapporteurs: W. F. SUMMERS, Department of Geography, Memorial University.  
CLAUDE LANGLOIS, Geographer and Town Planner, Central Mortgage and Housing Corporation.

## Lead-Off Speaker (Mr. CARVER)

We are going to discuss the regions of Canada that have a recognizable identity because they are focused upon centers of urban population. We are concerned with:

1. The natural resources in forests and soils and crops that are of value to the nation as a whole.
2. The resources that particularly nourish the urban population, either in the form of food and water, or through sustaining the economic life of the city in raw materials and power.
3. The landscape that surrounds the city and provides its whole environmental character.
4. The build-up of the entirely man-made physical resources of the city itself—its offices, workshops and factories, its housing and its community installations.

In our discussion we must have in mind that though city people may individually be good housekeepers, as a mass city people more than country people are selfish and greedy, messy and untidy. City man is inclined to foul his own nest, to spoil and litter the countryside, and is a hopeless amateur at governing his collective behavior for the creation of a beautiful and stimulating environment to live in. Why is this? Perhaps it is because people are repressed by the highly organized, standardized life in big cities and this makes them rebellious and un-

governable when it comes to collective efforts to build a fine city region. You can tame a river in its valley but the growth of cities is a torrent that resists every control.

So we are not going to discuss something that is easy to do. It is thus probable that bold, blunt, direct and imaginative measures are likely to be more effective than polite, tentative, little-bit-at-a-time efforts.

Discussion of this subject is difficult because there is no such thing as a typical urban-centered region. They come in all shapes, sizes and geographical flavors. For instance, there is St. John's tucked away in one corner of the Avalon Peninsula of Newfoundland, far from being at the center of its region. Or there is Vancouver sprawling all over the valley floor of the Fraser River.

There are regions with many small urban centers. Then there are regions which are still in the process of crystallizing and consolidating their urban centers.

The process of urban settlement in our country is continually taking shape around us. The thinning out of the rural population and the thickening and massing of the urban population is something we may regret. There was a friendly informality about the homely clustering settlements of early days, such as those on the Atlantic and St. Lawrence shores, which seems to be impossible to reproduce

in the suburbs of the modern city, though this still seems to be the sentimental image that inspires the suburban single-family house and lot.

Though there are many different kinds of urban regions, in this discussion it seems necessary to focus our attention on that kind of urban-centered region which Mr. Gertler, in his paper, calls "Man's characteristic habitat, the new kind of regional community focused upon a massive city, a region in part intensively urban, in part suburban, in part rural-urban and in part entirely rural . . . the skyscraper, the suburban home, the drive-in restaurant, the small holding and country cottage, factory and farm—all driven together into a new kind of regional community by the peculiar forces of our age."

And these "peculiar forces of our age" have been very well explained in David Slater's paper. In spite of all the arguments for locating industries in pleasant small towns where wages and costs and land prices are not so high, industry gravitates to the big metropolitan centers because "for many businesses making industrial location choices, the world is a rapidly changing and uncertain place. Agglomerations of industrial activity provide a far better possibility of coping successfully with uncertainty than do decentralized locations . . . the opportunity for flexibility in big cities, the access to a wide variety of expert help . . ."

One of the first difficulties you come across in discussing the urban-centered region is the problem of defining boundaries. The Conference papers are quite contradictory about this. There are several admonitions that it is no use discussing the subject unless you can set out the boundary of a region because without a definite boundary you cannot specify any jurisdiction or limits. I suspect that the river valley conservationists have had a strong influence here; it is easy to trace the boundaries of a watershed because water obediently flows downhill. But you never know where people are going to pop up! To adapt a familiar verse,

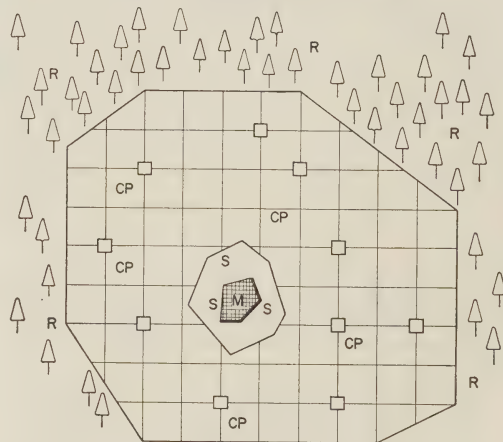
Conservation works with maps,  
Urbanization has to deal with chaps.

People do not stay inside boundaries and cities keep on growing. The shadow of the city on the surrounding landscape keeps on lengthening as you look at it. As communications stretch out, its presence is felt farther and farther from the center. For this reason I am going to suggest that, as a basis of discussion, you think of the urban-centered region not as a still picture of land and trees and buildings and motionless figures in the landscape, but think of it rather as a magnetic field with a powerful intensive focus on the center at Dorchester Street, University Avenue, Georgia Street, Portage

and Main, or whatever it may be. You then see that the impact of the magnetic force at the urban center declines as it reaches out to farms and fields and forests 50 miles away.

Within this whole field I think you can distinguish four concentric zones. In each of these the impact, the influence and the interest of the city is somewhat different in kind and in degree. Consequently, the kinds of control over land and resources must differ in each zone, the nature of the jurisdiction must differ, different parties are involved and different objectives are discernable. These differences, I believe, should be the essence of your discussion.

#### THE URBAN-CENTERED REGION



M for METROPOLIS, MASS-CITY and MOTHER CITY  
S for SPRAWL, SHOCK and SUBURBAN SHADOW  
CP for CONSERVATION PARK and COLLABORATIVE PARTNERSHIP

R for RESOURCE and RECREATION

#### Area M

Before any kind of regional planning can be operated over a larger territory, it seems essential that the main urban center should be consolidated into some kind of *metropolitan form*. In almost every case this built-up center is divided into a number of municipal jurisdictions. To construct some form of metropolitan unity is worth doing anyway in order to achieve a rational program for land use, highways, housing and municipal services within this already urbanized area. But some kind of unity is an essential feature if the metropolitan center is going to make demands upon the surrounding region. The urban center people must be able to speak with



a single voice to press their requirements for recreation space, for ingress and egress across the region, for access to lakes and waterfronts.

The present upheavals in the Metro organizations of Toronto and Winnipeg and what must be done in Vancouver and in Montreal—these are essential preludes to larger scale regional planning and development.

*M* is for *metro*, the *mass city*, the *mother city*.

#### Area S

Outside the built-up city is the ring of land into which the city is growing. The inside edge of this ring is in the actual process of conversion from rural to urban land; it is being scraped clean, graded, serviced and built upon. The leading outside edge of the ring marks the first line of impact on agricultural land, the warning signal that transformation is to be expected. This whole belt corresponds to the area of "urban shadow" that has been described in the important Conference papers presented by Mr. Crerar, Mr. Krueger and the Ontario Conservation Council. It is the characteristic of these areas that farm land is being withdrawn from productive use. In many cases the total acreage of this ring is twice the area of the built-up city and, in the most wasteful situations, as much as five times the area.

It is not a coincidence that the land on which cities are being built is usually of first-class agricultural quality. The site requirements for a crop of human beings are very similar to the site requirements for any other kind of crop. There has to be workable ground for building and servicing and land surfacing; the ground must be reasonably flat, well drained and have an accessible water supply.

This area in transition is designated *S* for *sprawl*, for *shadow* and for *shock*. It is the belt of *urban growth*.

#### Area CP

The next concentric ring is immediate surrounding environment of the growing *mass city*, the domestic home territory on which city people look out, an area of farms, woods, hills, waters, the garden of the city. This domestic landscape is the setting for urban life. For a mobile, car-borne population, it is an important part of a city's amenities. Beyond the city walls are the woodlands, parkways, water resources, the whole scene that nourishes the life of city people, besides nourishing cows that give milk for city people.

This area is designated *CP* for the words *conservation* and *park*. Here the motive is to conserve agricultural productivity and to regard these lands as a vast rural park in which the city is set. *CP* also stands for *collaboration* and *partnership* between city people and rural people in achieving this aim.

#### Area R

The outer part or hinterland of the urban-centered region is a resource area that has two principal values for the urban center. It is in many cases both a source of raw materials on which the economy of the city is based and also a recreation area for city people. On both the Atlantic and Pacific coasts, the forest regions near to cities provide both wood products and also are the scene of summer and winter sports. In the Avalon Peninsula, the St. John's region, there are mineral ores and fisheries. For western cities there may be oil or power resources in this part of the region. For Montrealers, the Laurentians are part of the life of city people. Half the population of Ottawa goes up the Gatineau to a lake in summer or for skiing in winter. The Muskoka District is as much a part of Toronto as the corner of King and Bay. Life in Winnipeg would be unsupportable without the Lake of the Woods and Winnipeg Beach.

Though this *resource territory* of the urban-centered region has clear associations with city affairs, yet it is difficult to map the conventional watershed of an urban-centered region to define where the urban center becomes a factor of less importance than some other regional association. The urban-centered region has no clear edge in this *resource territory*.

If you are going to construct a system of controls over land and resources throughout the whole urban-centered region, you must start by appreciating that the situations are somewhat different in each of these concentric parts of the region and quite different treatments are required.

For instance, at the very central core of *M*, which has to function efficiently as the nerve center of the whole regional community, no one would deny that city government must have the highest degree of control—because everyone's interests are involved. You would not expect to find the need for such authoritative controls nearer the periphery of the region where relatively few people's interests are involved.

It has been an interesting trend of the last decade that the inner core of the city has been recognized as a place of state, rather like the Acropolis or Roman Forum, to be designed by the authority of the city-state. Examples of this are the Toronto City Hall and Civic Square, some new developments in Montreal's central city and the important urban renewal work at the centers of many American cities, notably Philadelphia, Baltimore, Detroit and Washington. Here there has been a new vision of the center of the urban region and a new willingness to exert forceful controls.

Let us consider how the city is involved in con-

trols over parts of the region that lie farther away from the center.

### *Area S Controls*

In this part of the region the characteristic problem has been that the task of converting rural land into a city has been imposed upon a suburban municipality which is itself in a state of shock. Its population is split, half rural and half urban, neither part having resources or funds or any real motives for city building. Why should the farmer pay to provide schools and services of an incoming urban population? Why should the newly married suburbanites pay for the next lot of similar suburbanites? The situation invites disintegration of agricultural operations and a total disinterest in the vastly important decisions that are being made for the building of a city.

As a general principle, the *mother city* which attracts population, creates employment and spawns the suburbs should be responsible for city building. It alone can muster the funds and personnel to do this properly. The logical position would be to put this zone into the jurisdiction of the metropolitan government and, as new communities are settled and become established, new urban municipalities would be formed to take responsibility for local affairs.

The controls required are of two kinds. First there should be *preventive* measures such as prohibition of premature subdivision of land so that its productive agricultural use may be sustained as long as possible, coupled with a tax system that does not penalise farm operations for city building purposes. The aim of preventive measures should be to reduce the area of "urban shadow." Secondly, there is the *constructive* development of the city. The *mother city* should itself acquire land in advance for new town centers, the cores of new suburban communities. Each of these would be a civic campus of public buildings, high school, auditorium, library, stores and churches. The definition of these focal points would provide a magnetic focus to keep suburban building from sprawling inconsequentially all over the map. Each would be a minor version of the city's central core.

The political arrangement to control the S zone should be based on the theory that the *mother city* governs this land "in trust" for the future generation that is going to live there, but is not there at the time of city building. This is an arrangement analogous to the federal government's responsibilities for the northern territories while they are being raised to self-governing provincial status.

### *Area CP Controls*

This is a working, inhabited, cultivated area in which the resources have been built up over the

years for agricultural production and now have to be built up even further to serve the mass city. The program of controls has three elements:

1. Conservation and improvement of the agricultural landscape and protection against the destruction of its amenities by the untidy commercially propelled city people.

2. Admission of a small build-up of population in small towns and villages, but a general restraint upon exurbanites and dormitory communities which inevitably cast their blighting shade on this conservation park.

3. Construction of new city-serving features, such as parkways and freeways across the zone, recreational use of suitable waters and landscape features, and the location of a few urban institutions like hospitals, water supply works, etc.

The control system for this zone, unlike in the S zone, must be based on a joint and mutual interest of urban and rural people. Farm people live and work here and conduct their public affairs through their own elected bodies. The metropolitan people also have an interest because this is their immediate environment to which they must have access, ingress and egress. So there have to be collaborative regional authorities to work out compatible control plans. Presumably these authorities should generally resemble the form of the District Planning Commission developed in the Edmonton region.

### *Area R Controls*

Here the interests of the urban center population come in contact with the resource interests of provincial governments and even with considerations of the national economy, rather than with the organized local population. Here we might conceive a new kind of regional agency based upon M and, with provincial participation, operating extraterritorially. Perhaps we should re-examine what was done for the citizens of New York City through the extraterritorial agencies for parks and planning conducted by Robert Moses. And there is much to be learned from the splendid work done for the people of Ottawa and Hull by the National Capital Commission in giving access to the great playground hinterland of the Gatineau Hills.

If only we could solve the problems of consolidating our urban centers themselves, we might build a new kind of urban municipality that was not entirely bounded by its city limits but also possessed territory in its own hinterland, a kind of urban *commonwealth* with outlying possessions. This would represent the true nature of the regional relationship between a metropolitan city and a resource region.



**Discussant (Mr. GIFFEN)**

A very detailed explanation of the makeup of the Edmonton District, its problems and its responses to them has been given by Lash and Marlyn in their Background Paper entitled "The Edmonton District—A City Centered Multiple Resource Region." Also, an indication was given of the basic structure of the Edmonton District Planning Commission and its evolution as a regional planning authority.

You will understand that this evolution was not smooth. Even 14 municipalities will not always agree on a line of action to be taken jointly, especially if this action will mean a curtailing of their own municipal rights in the development field. The Commission is still evolving.

Municipal co-operation which began slowly and as a direct result of insurmountable urban problems has now blossomed into policies which cross municipal boundaries for the benefit of the whole region.

Recent growth of urban areas has created problems which are handled with difficulty under the usual municipal framework. For example, as Edmonton city grew, areas beyond the city limits also showed growth. A small coal-mining town on one side and a large number of small-holding parcels on the other side expanded, and in the process pushed to the city limits. In another direction the industrial development spawned by oil was moving in force into a rural municipality.

In still other areas there was scattered residential development on previously subdivided land. So for three or four miles around the city there occurred a continuous concentration of development involving six municipalities, in which roads, services and land use had to be co-ordinated if it was to function at all or if enormous and unnecessary expenditures were to be avoided.

Beyond this area a whole range of other uses were moving out into rural lands. Some were revenue producing, some were costing much more than they were contributing or were giving rise to health, sanitation or welfare problems.

To the urban areas, these uses, if wrongly placed in the path of urban development might present excessive costs to resubdivide, to service or to extend major roads.

It is evident that these changes which are occurring are affecting cities, towns and rural areas alike. In many cases what one municipality does may profoundly affect another municipality. Some of the problems can only be solved by working together.

To work together, each municipality must be aware of the other's problems. Each must respect the other's problems and viewpoints. From our local experience this co-operation is best accomplished by a body which has representation from all the municipalities

concerned, plus representatives from those departments of the provincial government which are involved in development decisions in the district area. This body should meet regularly and should not be purely advisory in function. It must have the power to make decisions.

Gertler, in his Background Paper defines the following challenges for regional planning. First: a strategy for growth. This is a defensive type of planning which is linked strongly with the close-in urban area. This planning generally deals with the solution of problems and the correction of past errors and the modification of present anarchy. Even in this stage, planning must be regional in scope. The central city must know what is beyond its boundaries. At the very least, maps of the city should extend into the surrounding area, so that urban planning will not be done in a vacuum.

Second: there must be protection for the land surrounding the city which is in the direct path of urban expansion. This regulatory action must have the support of an enlightened public who are aware and have accepted the fact that land is a unique resource. Certainly the planner must have positive answers for the owners of agricultural land, who see their chances for selling their land at a large profit being thwarted by protective policies. I believe the community at large can be shown the wisdom of controlling land use for the benefit of the region.

These first challenges lay the foundation for the third challenge, which is to begin planning positively. Regional planning can move on to the goal of providing a favorable environment and framework for optimum resource use.

The Edmonton District Planning Commission has been meeting these challenges.

The control of the immediate problems is set out in the following preliminary district plans: The Preliminary District Plan, Metropolitan Section; and the Preliminary District Plan, Highway Commercial Zoning Section. These plans are parts of the eventual over-all plan for the district and they have been accepted by the member municipalities. Once these plans have been passed by the Commission, the municipalities are required, by *The Town and Rural Planning Act*, to abide by the comprehensive zoning set out in the plans when making development decisions at the local level. Both of these sections were formulated and advanced to the Commission by a special committee made up of those members who are most affected by the plans. The preliminary district plans are part of the Commission's evolutionary process. Over the years the Commission has carried out a large number of studies which have formed the basis for these plans. These plans are the result of a gradual acceptance, by the members, of



the importance of a metropolitan and regional attitude in planning.

In considering further the effect of urban expansion on resources, it is well to look at the suburban trend of residential development. Small holdings and country estates as well as the larger acreage parcels which are not truly rural, have come into their own. Commission studies have formed the basis for the advice given to the rural municipalities in directing this development. These studies have examined the problems created by these holdings and have recommended a course of action which will minimize the problems.

Another facet of land use planning is related to the demands for resort and recreational development. This type of development, to be adequate, must meet the demands of both private and public interests. The Commission is currently surveying all the lakes in the district to assess their potential for resort development.

The Commission took a major step in the formulation of a regional plan with the preparation of a general plan for the Municipal District of Stony Plain. This plan provides for the orderly and

economic development of all land within the municipality. Attempts were made to weigh all the factors which determine the economically optimum use of land. These factors include existing land use, soil, topography, existing agricultural activities and the present relationship of human settlement to public improvements. All these factors form the foundation of the rural land use plan. The plan also embodies the special land use needs of the large metropolitan population for whom the municipal area forms a rural doorstep.

I have now given you some idea of what regional planning means to the Edmonton District Area. I should like to emphasize that I believe that regional areas are unique. Regulations and policies may differ from region to region. However, regionalism permits a tailoring of policies to fit different situations. Basically, we must understand the region before we can deal with the region's problems intelligently. Underlying all regional planning must be a positive approach. It is not enough to solve problems. You must create a favorable environment and framework which will encourage and utilize the inherent advantages of each region's resources.

## DISCUSSION

The case for provincial governments exercising full control of the resource area surrounding an urban center was advanced by some who pointed out the small degree of urban influence and interest here contrasted with the high level of provincial responsibility. It was agreed that the agricultural area should be preserved from urban encroachment; some even suggested complete exclusion of new settlement or extension of existing villages.

There was much discussion concerning the validity of the concentric framework type of region proposed by Mr. Carver. However, it was agreed that this should be used as a basis for further discussion. A multi-centered region with many overlapping concentric rings might require a different approach to the problem.

There was general agreement that city-centered regions exist—at least as areas with interrelated problems arising primarily from the impact of the urban center on the "shadow" zone.

The impact of the metropolitan area on the urban "shadow" area was discussed, with many citing examples such as water pollution, loss of agricultural land and neglect of resources. Most of the discussions which followed concerned the degree and nature of the controls which might be established to minimize the harmful effects of urban impact. Most supported

the view that control in this area should be exercised by the metropolitan center. There was a recognition of the possibility of antagonizing the people of this area with enforced control from the urban center. It was felt, however, that if towns refused to exercise control over this area no one else would.

Specific examples of how control over physical development in the "shadow" area might be exercised included the expropriation of land, continuation of federal-provincial land assembly schemes and an appropriate tax structure. It was suggested that perfect control will be hard to achieve and that partial control may be the only type possible. There will be natural resistance to a central agency freezing land to control development in this area.

There was agreement that development of the "shadow" area be kept as concentrated as possible with avoidance of low-density areas. It was also suggested that initial over-all zoning plans open up many pitfalls. A flexible policy with zoning going hand in hand with demand enables alteration to fit new situations.

A second section of the Workshop, however, held the view that initial over-all zoning would avoid future conflicts and the difficulties that would be caused later by the growth of vested interests opposing any change in the *status quo*. Initial planning

would not be so rigid that adjustments could not be made to accommodate new situations.

Discussion centered mainly on the question of whether control should be exercised solely by the metropolitan type of government, by the provincial government or by some intermediate body. There was no general agreement reached here.

Many supported the metropolitan type of government with control extending out to the end of the "shadow" area.

Dealing with the weaknesses in the metro system, spokesmen pointed to the high degree of red tape, the difficulty with powerful or stubborn member municipalities, and the fact that ultimate control is in the hands of provincial authority anyway.

The urban impact on the agricultural area was shown in the recreation activities of city people, although it was agreed that the impact was weaker in this zone. Most supported either provincial government control for this area or a regional council control.





# *Urban-Centered Regions Workshop B*

THURSDAY, October 26

The evolution of governmental processes to  
meet the challenge of regional development.

- Chairman: D. F. TAYLOR, Chief Planner, Community Planning Branch,  
Ontario Department of Municipal Affairs.
- Co-Chairman: G. CLAUDE SMITH, Director, Town Planning, Prince Edward  
Island Department of Industry and Natural Resources.
- Lead-off Speaker: P. G. DAVIES, Q.C., Barrister and Solicitor, Clyde, Alberta.
- Discussants: H. BLUMENFELD, Consultant, Metropolitan Toronto Planning  
Board.  
J. C. LAHAYE, Town Planning Consultant, Quebec.
- Rapporteurs: D. J. BIRD, Director of Community Planning, Nova Scotia De-  
partment of Municipal Affairs.  
LOUIS-EDMOND HAMELIN, Director, Department of Geography,  
Laval University.

## **Lead-Off Speaker (Mr. DAVIES)**

This Workshop is primarily concerned with land as a resource, its uses, its abuses, its blessings, its curses, its responsibilities; and more particularly its relationship to planning on the basis of urban-centered regions. This field, generally speaking, represents an area in respect to which there has been, and still remains, a vast legislative vacuum. It is true that in recent years provincial statute books have been adorned with amendments marking the commencement of an assault on this entangled matter, but most, if not nearly all present today, must answer the question, "Have we effective regional planning in our area?" with an honest "No."

We have had before us the regional level legislative experience of other democratic countries including Great Britain, Norway and Sweden; we have had the opportunity to assess conditions in the United States; and we have had access to the reports of various commissions and studies in Great Britain where the problem was acute earlier by reason of war damage and more extensive urbanization. By and large we have chosen to ignore these experiences, and even now some areas in Canada are trying to settle the difficulties by means which have been extensively tried elsewhere and which failed, and which for the same reasons must fail here.

During this period of rapid growth we have not

failed in planning our homes; we have not overlooked two bathrooms, the garage or the rumpus room; we may even have a bar. Planning at the local level has succeeded in marking out suitable sites for commerce and industry; and industry itself has erected giant plants of the latest design. But all these structures have been amassed mainly for the single purpose of the individual within a local community, without regard for how they fit together as part of the total region in which we live.

The effectiveness of regional planning must be judged in terms of its usefulness in resolving the competition of agriculture and urban building for productive land, in preventing the misuse of unique recreational resources of land and water, in preventing the waste of productive land around urban centers (whether through fragmentation, miscalculation of urban land needs, speculative excesses, or otherwise), and in realizing the economic potentials of the region, while creating wholesome community environments. If these are fair standards by which to assess results, then urgent action through corrective measures must displace complacency.

Since the pressures generated by the urban centers themselves extend far outward and defy the political boundaries of towns, villages, counties, and semi-urban and rural municipalities forming part of the city-centered region, it follows that the basic diffi-

culty to be overcome is the devising of legislative and administrative machinery to assure the larger interest of the region will prevail over the lesser interest of one or more individual councils. It is at this point the structure of local government has bogged down. Looking back over the past fifteen years, local government comes off a poor second when compared with industry. Industry has gone a long way to meet the challenge of the new conditions; local government has either lagged or stood still, and by standing still has, in fact, gone back. Internally, industry can face the growth predicted for the coming years with confidence; local government must largely face it ill-equipped and with fear; that is, unless there is a legislative revolution! Other Torontos and other Winnipegs have hatched; others are in incubation; some almost appear to be deliberately spawned. Several of Canada's fifteen metropolitan areas are not immune. Here will be found the progenitors of sprawl and the brigands of land waste. City centers, in effect, are the cores of the regions, and the need for well-organized and solvent municipal units at this level must be beyond dispute.

Furthermore, the city-center level is the pressure level; it is here the inexorable problems of growth are ever-pressing with all their conflicts. If the allocation of land and the control of growth in the public interest is to be realized the structure of government must be geared to accommodate the incidences of growth.

Recent studies in the United States conducted by Dr. Robert C. Wood on behalf of the Committee for Economic Development show that as a result of the sweep toward social multiplicity and political autonomy, as of January, 1957, there were 15,658 individual local government units in the 174 metropolitan areas, (an average of 90), having discretion in the management of their own affairs. Outside the central cities most metropolitan residents live in municipalities of between 10,000 and 25,000 people, but there are more metropolitan units with less than 1,000 inhabitants than any other size group reported by the census. The need for the regional approach was never more pressing or widely recognized, but the degree of Balkanization renders its realization practically impossible. Are we to model our growth on this proliferation through inaction?

In Canada, the Gordon Report served notice on all levels of government of a continuance of the great swing from rural to urban living, with a probable 9 per cent only of the population resident on farms in rural areas by 1980, and over half the total population in metropolitan areas of over 100,000. Can we look forward with equanimity to an urban pattern of quasi-mongoloid areas, swollen and bloated with their numerous and divided local authorities, each

competing with the other to devour industries, to escape undesirable residential assessment, or to flee the cost of redevelopment of the central city? It seems clear the time for policy-making is now. At present, there are no unsurmountable obstacles to the planning of growth in the public interest.

It is well to keep in mind that local authorities of all kinds are creatures of provincial statute, and had there been no delegation by the province to a local authority of municipal government in all its phases, including planning, all these matters would today rest in the hands of the province alone. It seems clear, therefore, when conflict arises between various local authorities as constituted by statute, or when so-called "local affairs" take on a regional aspect, and the welfare of neighboring local authorities becomes concerned, that a solemn duty falls upon the province to devise legislation so that the public interest of the region will be the dominant consideration, subject only to the wider interest of the province.

Generally speaking, the development of the planning process in Canada has come about slowly, firstly at the municipal level, and then moving, snail-like, to the intermunicipal level. It has not come about through foresight, but largely through hindsight dragged by the compelling force of necessity, and all too late. Planning at the regional level has been greatly hampered, and continues to be by cries of local autonomy and the casual acceptance without examination of the statement that planning must have public acceptance and must come from public demand. This is *laissez-faire* at its best, producing its worst. There is no more justification for this view than there is for the view that no specific policy or change in policy at the municipal, provincial or federal level can be instituted except by public demand and public acceptance. The function of government is to govern—at all levels—and this means the best the democratic process can produce. It entails taking the fullest advantage of the knowledge and capacity of the many brilliant minds in the public service, the research facilities, the formation of policy in the long-term public interest, and the translation of this policy into legislation. Any definition falling short of this is a negation of democracy.

Before examining the legislative means required for effective regional planning, it may be useful to refer to metropolitan planning in The Greater Winnipeg and Toronto Metropolitan areas. The positive steps taken in these areas to halt further municipal deterioration and bring order out of chaos must inevitably make easier the ultimate wider regional approach. However, it must not be forgotten that essential though these plans are for the Toronto and Winnipeg Metropolitan areas, they do not constitute "regional plans" for these areas within the larger aspect. They do represent plans at the most urgent

level of their respective regions; but no one would suggest that these two metropolitan communities are not exerting powerful influences far beyond the purely metropolitan planning areas now prescribed. It is to this larger total region that we now turn our attention, and particularly to the legislative alternatives for effecting regional planning.

### 1. *The extraterritorial method*

This method involves the imposition on the total region of the principles underlying the Winnipeg or Toronto metropolitan schemes; in short, the metropolitan council would be charged with the formulation of the plan for the entire region. Bearing in mind that the ordinary urban-centered region as defined in this Workshop would embrace district towns, villages, and distinctly rural areas, it follows that it would neither be desirable nor democratic that the urban center should formulate or be charged with carrying out the plan. On the score of suspicion of city domination alone this method would fail.

### 2. *The voluntary method*

Most of the provinces make provision for inter-municipal planning on a voluntary basis. Generally speaking, the legislation provides for the establishment of a planning area by the Minister on his own initiative or on his receiving a request from two or more councils. Provision is made for joint planning boards. Provision is also usually made for the plan to be submitted to the local councils for approval, with final approval resting in the hands of the Minister or a provincial board.

The planning boards which come into existence on a voluntary basis often work under severe handicaps during their initial stages, when the disparity of different councils' views on the plan will be most apparent. This disparity has a chance of wearing off with time if the urban areas are small, but if the urban areas are substantial or the rate of growth rapid—spelling increased competition among the councils—the possibilities for success are diminished. Experience indicates that this method is not the answer to attain effective regional planning for a number of reasons. The first one is that two or more adjacent municipalities must recognize a need for joint planning and must be prepared in advance to take the chance on what will result. Some of the municipalities concerned may be highly competitive with one another for the attraction of industry or other favorable assessment. By the time the plan has run the gamut of a number of different councils for approval—each council most likely thinking in terms of its own interests—there is a high probability that the plan itself will be so dismembered or encumbered that its regional aspects may largely disappear, and the plan may tend to become a replica of the in-

dividual municipal plans. Furthermore, expanding the number of municipalities to take in the area necessary to represent the true region for the city centers might involve the separate individual approval of a host of different types of councils. The probability of long delays and interminable wrangle is thus enlarged and hope decreases for effective regional planning evolving from this type of legislation.

### 3. *An independent regional authority*

This method was examined by the Calgary-Edmonton Royal Commission. It involves setting up a separate regional authority with statutory powers to formulate the plan, adopt it, pass the necessary by-laws, and attend to enforcement. The executive board could be drawn by direct election, or by appointment from or on behalf of constituent councils. There are several objections to these proposals; foremost, it would introduce another independent tier of government in the area with all the attendant costs. Second, it would complicate the machinery of government and confuse the citizen; here would be another level of government to deal with. Third, the purely local aspects of planning would remain with the individual councils, and with two by-law-making authorities, each working independently of the other, the possibilities of confusion and jurisdictional disputes between the regional authority and local councils would be increased. This method was discarded on ground that more suitable practical means were available.

### 4. *A provincial master plan*

There are some who advocate that the province itself should take over the planning function at the regional level. A number of provincial departments, including highways and resources, have a vital interest in all regional plans, and indeed in the plans of the large urban centers and other municipalities. If through poor land use or other inadequate planning the development of any area is uneconomic or results in waste it has its repercussions at the provincial level. The sum total of provincial strength and prosperity is the aggregate of the strength and prosperity of its regions. The misuse of land and waste at the municipal level is a net loss to the province.

But the arguments against the province taking over seem overwhelming. Not the least in weight is the political one; who will bell the cat? Little more need be said, except to point out that planning at the local level as a normal function of local government. The regulation of the private use of land in the public interest is more acceptable when the people of the region through their own representatives do it themselves for purposes they come to recognize as important. Furthermore, it is a common provision of all planning statutes that the plan as finally ap-



proved at the local level must receive the approval of the Minister in charge of planning, or a statutory board appointed by the province. Thus, the province always has the final say as to what the final plan is, and presumably can and does protect provincial interest.

This brings us back again to our main theme. It is at the intermunicipal or regional level that the planning process has broken down. The remedy lies in devising legislation to meet the new conditions of rapid growth; of providing for consolidation of uneconomic urban or semi-urban units by a realistic adjustment of boundaries to conform to the realities of rapid growth, or bringing them under a metropolitan municipal umbrella, according to conditions; and at the regional level, to provide the machinery by which the regional interest will prevail over individual local interest to the same purpose that the provincial veto quite properly prevails before the local plan comes into effect.

#### 5. *Minimum legislative requirements for effective regional planning*

From the total of provincial experience at the intermunicipal and regional level, fortified by experience elsewhere, it is possible to set out with reasonable certainty the minima required to attain effective regional planning in Canada. I largely adopt the criteria in Mr. L. O. Gertler's brilliant study at page 401, Volume 1, of the Conference Background Papers:

1. To be certain that administrative boundaries approximate urban-centered regions, there needs to be authority at the provincial level to define and establish the boundaries of regional planning authorities.

The decision in respect to boundaries is one which should come from provincial-municipal consultation, with the final decision in the hands of the province. In addition, the establishment of a regional planning area should not necessarily await the petition of local councils. In many cases the rivalry or antipathy of local interest will militate against a request for the formulation of a regional authority and these are most likely the cases where the need for the regional approach is the greatest. The direction must come from the top.

2. Because such areas will embrace at least one city and a number of towns, villages and rural municipalities, the governing council (board or commission) will have to be based on a principle of representation that will be considered equitable by the constituent municipalities.

By reason of the marked difference between regions in various parts of Canada no hard and fast rule can be laid down. Existing systems vary widely on the

question of representation with the scale of present legislation weighing heavily in favor of elected councillors nominated by and from constituent members.

3. Because they are areas in which the activities of provincial governments are important in such fields as public works, highways, agriculture and municipal affairs, representation of relevant provincial departments will be highly desirable for the purpose of co-ordinating provincial-municipal effort at the regional level.

This is so obvious that it requires no explanation.

The advantage of this type of provincial participation is twofold; first, it affords a continuous liaison between the province and the region; second, arising out of this the interested departments of government are constantly aware of what is taking place at the local municipal level and have their direct part in the formulation and amendment of the plan.

4. To perform effectively, the regional planning organization needs the authority to control the subdivision of land; and to prepare and implement a comprehensive regional plan.

(a) Governing the inherently regional aspects of land use—in particular, the general urban zone, the agricultural districts that define urban limits, the generators of urban growth such as major industry and highway development, regional parks, and the location of new urban areas in the region.

(b) Establishing the stages and sequence of development, and

(c) Programming—in terms of standards, location and time schedule—capital works of acknowledged regional significance.

The regional authority now contemplated would be charged with preparing and approving the regional plan in those matters where the interest of the region should prevail. Regional appointees from the local authority would take their part as representatives on the regional authority, and the approval of the plan would depend on a satisfactory majority vote of these representatives at the regional level. In practice, this does not mean that local councils do not see the plan or have the chance to study it, or make representations through their representatives or by committee. It does mean that the approval of the plan is not dependent upon the separate votes of local councils; and appellate provisions would provide for final review at the provincial level before the plan came into effect. Property owners would have similar protection.

5. To meet the threat of breakdown in environment and government due to chaotic and unregulated growth, the regional organization requires authority to prepare and implement a declared

policy as a basis of operation for a limited period until the comprehensive regional plan is completed.

The dynamics of growth dictate that in the interim period, while the regional plan is in the process of formation, growth must be guided and controlled; there must be a declared policy or preliminary general plan as a basis from which to start. If this were not provided for, some of the goals would be defeated before the final plan came into effect.

6. In order to foster public understanding and support for the goals of regional planning, the regional authority should be free to carry on a program of public education.

City residents, by reason of urban land use control through zoning, have been going through a process of education for some years as to the need of such control, but elsewhere this experience may be lacking. It is essential that the regional authority should be able to carry on a program of public education.

7. To attain the positive goals of regional development—the realization of the full economic potential of the region while attaining all its possibilities for an inspiring physical environment—requires

(a) That the regional planning authority develop a number of positive instruments for influencing the pattern of regional growth, such as "new towns" legislation, and

(b) That the governing statute shall have a built-in flexibility, allowing for the province and the constituent municipalities to assign new functions to the regional authority in response to new needs and changing aspirations, such as the need for the joint financing of a capital project of regional significance, e.g., a major parks development, or the desire for capital budgeting on a regional basis.

Some provinces have new towns legislation, modeled to suit local conditions on the basis of similar legislation in Great Britain. This makes it possible to direct growth at the regional level where desirable as part of an over-all policy giving balance to the region and at the same time relieving growth pressures where they cannot be economically absorbed. In addition, projects may well arise in one unit for the specific benefit of several or all. It is advisable that the statute governing regional planning should have elasticity so that regional policy may meet new needs.

8. To place regional growth in a broader framework of provincial policies and objectives, to realize the community and resource planning role of the region, as a unit in a network of interrelated regions, the co-ordination of municipal interest at the regional level will need to be complemented by

the co-ordination of regional interests at the provincial level.

9. To secure an adequate staff of qualified planners cost sharing arrangements on a formula basis are required between the municipal authorities and the provinces.

Earlier in this paper the view was advanced that generally speaking a far more active role on the part of the province was called for than has hitherto been assumed. There are solid grounds for this thinking based on the realizations, first, that land as a resource has been the subject of waste and misuse, and second, that this waste and misuse has arisen largely through urban growth. Alberta and Newfoundland have each placed at the top of the provincial planning scale a Provincial Planning Advisory Board. In Alberta this Board consists of eight members, all senior officials, drawn from various departments, including Municipal Affairs, Highways, Agriculture, Lands and Forests, and Education, which include the Director of Surveys, the Provincial Sanitary Engineer and the Director of Town and Rural Planning. The Board hears all appeals, performs defined administrative functions, and acts in an advisory capacity to the Crown on matters pertaining to urban and rural development, including subdivision regulations. The spearhead of all this activity is the office of the Director of Town and Rural Planning. The province contributes half of the operating costs of the existing seven regional commissions.

From north of Edmonton southerly some 375 miles nearly to the United States border an almost unbroken chain of regional commissions now operate. Alberta's eight cities, except the small coal mining city of Drumheller, are within areas of regional commissions which function as subdivision approving authorities within their boundaries. In consequence of this, land use is under firm provincial control at the top level (where there are no regional commissions), and at the regional level through regional commissions.

This produced interesting figures for 1960. First, over 72 per cent of the population live within regional commissions; second, approximately 95 per cent of all residential permits issued were in areas subject to interim development control or a zoning by-law; and third, approximately 90 per cent in dollar value of all permits covering commercial, industrial, or other development were in areas subject to regional control.

This points up the absolute need of financial assistance from the province at the regional level. The furnishing of planning services to its smaller units which do not have planning departments is an important aspect of the regional authority's work. If all its budget were to come from the real property



tax through local council contributions, it would be doomed to failure. Furthermore, the handling of this work by the regional authority relieves the planning department at the provincial level of greatly enlarging its staff to give this service; and finally it is best that this service should come from the regional level where representatives from the local councils are the same persons dealing directly with these matters and taking part in the formulation of policy.

#### *Regional planning in the Edmonton area*

This area is rich in regional planning lessons in Canada. It may be worth reviewing some of them to illustrate the minima for effective regional planning. At present the Edmonton District (Regional) Planning Commission covers 5,000 square miles, and measured from the central city its boundaries run some 60 miles to the west, 24 miles to the east, 30 miles to the south, and 36 miles to the north. Nineteen separate councils are members. The Commission includes provincial representation from the Departments of Agriculture, Education, and Highways, as well as representatives from the above units.

From 1950 to 1957 these regional commissions were required by statute to prepare and recommend to each member council a regional general plan. For two or three years the system worked well until industrial expansion burst over Edmonton's east boundary. In 1951 an adjacent rural municipality terminated its attendance at the regional commission, reportedly annoyed because the assessment from a large creosoting plant was lost to a town forming part of Metropolitan Edmonton. The final blow at effective regional planning in the metropolitan area was dealt the Commission by the withdrawal in August, 1954, of the rural municipality immediately adjoining to the east. Despite these reverses the remaining members of the Commission continued its work, and ultimately the two truant members freely returned to the fold.

In 1957 the Act was amended to provide that where any municipal unit within the regional authority has a minimum population of 50,000 (or less at the discretion of the Minister), membership was compulsory. Equally important, the regional authority was directed to prepare and bring into effect a regional plan, on a two-thirds vote of its members present and voting. Member councils were required to pass the necessary by-laws to conform to the plan. The Edmonton and Calgary Commissions fall within the amended law; the remaining five Commissions are still under the original legislation, but a council cannot withdraw membership without provincial permission.

The Edmonton Commission at present has a staff of eleven. A regional preliminary plan is in effect; all development within the ambit of the plan

is under control. The detailed Metropolitan Section of the Plan is complete. It covers 400 square miles, of which some 70 square miles represent the area of the Edmonton urban municipalities, and it provides for estimated metropolitan land needs for 15 years. It should be noted also that the plan for Edmonton's Metropolitan area is a section of the regional plan formulated by representatives of the total region and not by the metropolitan area urban councils alone. The Highways Section of the plan is completed and in force, with all highway development under strict control.

The district and new towns section and the parks and recreation section are also far advanced; agreement has been reached on annexations, utility extensions, sewerage disposal, (the latter two items involving regional towns some distance out) and a number of other studies have been undertaken. The regional water supply has been examined with regard to future needs. The long-term use of the Saskatchewan River Valley through the region is controlled through the plan as well as measures with regard to air and water pollution. The survey work for all lakes in the region, excepting the area of a newly admitted member, is completed for the park and recreation section. Industrial and other urban growth has been encouraged and directed to regional towns with success. The provisions of "The New Towns Act" applies to one such town.

At the internal level of commission meetings and administration the system has worked well. Only one appeal has been taken to the Provincial Planning Advisory Board from a commission decision; this had to do with whether or not a proposed development was premature. Two other recent decisions are reported to be in the course of appeal. This points up one of the most important aspects of the Alberta legislation, namely, all appeals lie to the Provincial Planning Advisory Board, and not to the Minister. A dissatisfied council knows it has a right to appeal, but it also knows in advance that in order to succeed it will have to establish that the local municipal interest transcends the wider regional interest. Is it not preferable to have this type of appeal from features of the plan, once the regional authority has approved of it, rather than run the risk of mutilation and delay through requiring the direct approval of the large majority of individual councils?

Apart from practical accomplishments and contributing to the orderly development of the region, perhaps the most significant item is the gradual change in thinking from "local" to "regional." Councils have come some distance toward realizing that they are part of an indivisible whole. It is noteworthy that the only real problem source of the entire region is at the metropolitan level, and it arises largely through delay in determining the degree of consolida-



tion which is to take place in metropolitan Edmonton. The City of Edmonton has only two representatives on this multi-municipal regional body, yet, in a recent special report to the Edmonton City Council concerning the work of the regional authority, the city's Planning Advisory Commission stated:

"In total, the EDPG work constitutes an outstanding example of enlightened co-operation for the common good. Without such concerted action, much of Edmonton's own planning for the future would be pointless... Without this sort of unwavering protection, Edmonton's limits would by now have been a planning and economic nightmare. . . . Continued municipal agreement and consultation through the Edmonton District Planning Commission is essential to the 'orderly and economical development of the District Planning Area as a whole' as envisioned by the Town and Rural Planning Act. It is equally vital in Edmonton's own self-interest."

I must not leave you thinking Alberta is a sort of planner's paradise and regional Valhalla combined; such is not the case. There are thorny problems. Much remains to be done, but there is a confident feeling that a solid start has been made. It is doubtful if there is any branch in the science of government in Canada today where the need is greater, the stakes higher, the opportunity to do good wider, the challenge sharper, and the obligation to those who succeed us stronger than in the field of evolving a practical basis for regional planning.

**Discussant (Mr. BLUMENFELD)**

*(Summary)*

Mr. Blumenfeld pointed out that there were two circles; one the daily commuting area, the other the interest area, perhaps 150-200 miles from the center. The real problem was to do planning for this larger area; to find reasonable limits. Two stages appeared: first, organizing the planning machinery, e.g. boundaries, membership, etc; second, carrying the plans into effect, e.g. executive powers, financial resources.

**Discussant (Mr. LAHAYE) \***

#### 1. *The urban-centered regions vs. the metropolitan region*

The following comments are extracted from the Background Papers prepared for this Conference.

"The urban-centered region is formed by a geographic population concentration and by those relationships, such as human relations, established between a major urban center (or a group of functionally complementary centers) and the surrounding country, towns, villages and parishes."

"In such populated regions the legal basis requires more attention. In those regions may be solved the dilemma arising from the carrying out of extensive national programs dealing with the development of resources, patterned after the needs, the knowledge and the foresight of the residents of various regions and implemented with the assistance and co-operation of the population. In such urban-centered regions also the demographic pressure especially jeopardizes the renewable land and water resources. Finally, at that level the comprehensive goal of the development of resources takes shape, i.e. the improvements of the living conditions of the people in striving to create a more satisfactory environment."

"These regions take the characteristics of regional communities and thus provide a convenient basis for efficient regional planning" which necessarily extends beyond the metropolitan areas as generally understood. The regions centered on Montreal for example, would have a diameter of approximately 60 miles. This implies a much more extensive territory than that generally included in the Montreal metropolitan area.

These brief comments have been made to emphasize an essential point: it is only within the framework of organic regions rather than within that of arbitrarily established municipal areas that a problem such as that of the Montreal metropolitan area could be solved.

#### 2. *Problems of urban-centered regions*

The main difficulties with which authorities at various levels of public administration must constantly cope at the level of urban-centered regions are:

(a) Hierarchy of authority and overlapping of jurisdictions, combined with the lack of co-ordinating mechanism.

*Example:* In Quebec, hospitals, vocational schools, interurban roads, the control of water pollution, regional parks, the conservation of farm lands, the localization of basic industries, come under provincial jurisdiction; ports and airports, etc., come under federal jurisdiction; the municipal administration is responsible for drawing up the zoning by-laws and controlling land use.

(b) Conflicting interests and no referee.

*Example:* The Department of Agriculture may deem it essential to preserve farm lands, but municipal authorities control the apportionment. A regional park may be essential, but the municipality where it should be situated may well disagree. A low-cost housing project may be essential, but no council is in favor of such a project owing to the low income it will produce.

\* Translated from French.

(c) Necessary community services, but distribution of charges unfair.

*Example:* The efficiency of the Montreal Fire Department affects the insurance rates in neighboring towns, but all charges are laid on Montreal. A main sewer may have a larger diameter to suit a neighboring town, but it may be impossible to obtain a fair compensation for such sewer facility. An interurban road of local use may be built and maintained entirely at the expense of the province.

(d) Impossibility of working out town planning projects (municipal) because regional guidelines are lacking.

*Example:* The location of a highway is vitally important in a general town planning project, but there are often no comprehensive plans of provincial highway development. On the other hand, how could the highway department plan roads in municipal areas, without taking into account local (often non-existent) town plans?

### 3. *Elements of a solution*

(a) Regional planning authorities to check the disintegration of the environment by formulating a strategy for the growth of the main center and the adjoining region; to regulate the regional use of lands; to create a more favorable climate for the improvement of the community by judiciously promoting the geographic arrangement of activities which will provide employment and promote the growth of population; to decentralize planning while ensuring that

local plans are integrated into more comprehensive programs.

(b) Semijudicial authorities whose goal would be fair distribution of the cost of useful works between two or more municipalities within a region.

### 4. *Integration of regional organizations with provincial organizations*

The urban-centered region gains its internal cohesion by virtue of a complex of interrelated conditions, traits or forces. The goals of regional planning cannot therefore be considered outside this context. The larger interregional framework is essential both to set economic limits and to condition goals.

Moreover, the optimal use of resources can be achieved only if the urban-centered regions, the hydrographic regions, the economic regions and the frontier regions are all taken into account.

The regional development concept will make sense only if the watershed, economic region, or frontier region planning is integrated with the urban-centered region planning—metropolitan planning being a fundamental part.

It should be noted that this proposal does not imply the creation of an intermediate government; rather, it implies further development of existing organizations.

Co-ordination committees would provide the means by which people of the region might participate in planning decisions, while enabling the government to review plans in the light of broad trends and provincial needs.

## DISCUSSION

The following assumptions were accepted as a basis of discussion in Workshop B:

1. The region has its focus in one or more urban centers.
2. The boundaries of the region are approximately defined by the area within which the people of the city have regular contacts of an economic, recreational, social and political nature, with the people of the surrounding country, towns and villages.
3. Municipally, this kind of region may contain cities, suburban municipalities, towns, villages, rural municipalities, counties and a number of *ad hoc* functional organizations.
4. Because of the interdependence of the parts of the region, and because of the personal element in town-country contacts, this kind of area

tends to assume the character of a regional community which is in itself an important function in effective regional planning.

5. The regional community requires a defined boundary to be able to plan its development.

Agreement on the above assumptions was about the last point of general agreement during the entire Workshop.

While the issue was not specifically placed before the group it is probably valid to suggest that there was general agreement that *some* form of regional planning was imperative, that it should be carried out by *some* form of democratic agency, which would have *certain* definite relationships to existing governmental agencies and that *certain* goals must be achieved, using funds secured equitably from *some* source or a number of sources.

Among the matters discussed were the following:

1. Position of province in:
  - (a) Defining regional planning areas,
  - (b) Establishing objectives of regional authorities,
  - (c) Establishing master plan within which regional authorities might carry out their functions,
  - (d) Approving plans developed by regional authorities,
  - (e) Acting in adjudicating capacity re. inter-regional agency conflicts, regional agency-local municipality differences, etc.
  - (f) Financial support and staffing of regional authorities.
2. Mandatory or voluntary membership of individual municipalities in regional authorities—voluntary or mandatory implementation of plans adopted.
3. Regional planning arising out of regional government or as a specific function of non-governmental regional authority.
4. Relationship of regional planning authority to existing governmental units—servant, master or something else.
5. Are we making the most effective use of instruments already available to us for inter-municipal co-operation and action? Do we understand what we have to work with? Adjustment in government structures, even minor, are difficult—we must make use of what we have now as well as attempting to devise better (or what we believe to be better) mechanisms for regional action.
6. Implication of assessment practices on regional land use and pressures for development.
7. Present trends in municipal government geographic and functional re-organization: annexation, amalgamations, rural unit consolidations, reassessment of county as semi-regional unit, etc.
8. Functions to be performed by regional planning authority—plan making, advisory, administrative, research or control.
9. Ability of local municipalities to meet financial commitments of regional action programs. Are regional plans prepared to date giving sufficient attention to economic aspects of plan implementation?

One accomplishment of the Workshop was the production of a definition of a "planning region." Again no agreement was secured but the definition itself is interesting.

"A planning region is an organic, multi-dimensional, governing entity, reacting to economic, social and cultural stimuli, and whose existence, nature and extent (subject to forces beyond man's control) is dependent on man's activity. It maintains, continuously, the orderly arrangement, control and wisest use of all resources for a natural, beneficial and aesthetic environment for man."





# RIVER VALLEY REGIONS

Thursday, October 26, 1961

"This then is the problem to which we address ourselves. We are caught in a dilemma. On the one hand we recognize the validity of the slogan *One River, A Single Problem*. But on the other, when we attempt to unify development operations in the basin, we are confronted with new kinds of natural, social, economic and political relationships which need to be understood and accommodated if frictions and conflicts are to be avoided. The solution is not to be found in the independence of the river basin, but rather in setting up channels of interaction between river basin development and other related aspects of human affairs."

*Prof. L. E. Craine, Lead-off Speaker, River Valley Regions Workshop A.*

# *Introduction*

The scope for multiple resource development within river basin regions and the evolution of government processes for this development were discussed in two workshops.

Workshop A, discussing the scope for development, concluded that "no single answer" appeared possible to the development of resources within a drainage basin or a number of related basins. Workshop B, dealing with government processes, also noted the varying "administrative arrangements" of management that would be needed for river basin regions, in which the combinations of available resources and the stages of their development would all be different.

Both workshops indicated that there is a need for democratic participation in the integrated develop-

ment of river basins. Workshop B pointed out that experience had shown that the most effective river basin development organizations had administered their programs from within the regions with which they were concerned and that any such organization should be based on the principle of "democratic responsiveness."

Workshop A, which went more deeply into the scope of multiple resource development in river basins, recommended consultation with representative groups, both private and public, within the region as part of the planning program. A planning and advisory committee, according to this Workshop, should be set up to recommend the method of developing a river valley region.



# River Valley Regions Workshop A

THURSDAY, October 26

The scope for multiple resource development  
within river basin regions.

- Chairman: W. C. WONDERS, Head, Department of Geography, University of Alberta.
- Co-Chairman: J. K. REYNOLDS, District Forester, Ontario Department of Lands and Forests.
- Lead-Off Speaker: L. E. CRAINE, Chairman, Department of Conservation, University of Michigan.
- Discussants: A. H. RICHARDSON, Chief Conservation Engineer, Ontario Department of Commerce and Development.  
R. B. TRUEMNER, Director, Regional Development Branch, Manitoba Department of Industry and Commerce.
- Rapporteurs: PAUL TOURIGNY, Consulting Engineer, St. Lambert, Quebec.  
H. SCHWARTZ, Forest Products Research Branch, Canada Department of Forestry.

## Lead-Off Speaker (Mr. CRAINE)

Our Workshop assignment is a difficult and challenging one. The question of "scope" of multiple resource development in river basins is a controversial one in the United States; and one which I have followed rather closely both from inside a government agency involved in river basin development, and more recently, from the perspective of an academic post. It is a real privilege to be able to participate with you in examining this problem in Canada.

To define our field of inquiry it is helpful if we look at the terms of reference into which it has been cast by the Conference planning committee. Four features are significant.

First, our Workshop is a part of a series of discussions about regions and regional development rather than being cast in the context of water resources. This should not, however, preclude our talking about water resources to the extent they are germane to our objective.

Second, within the context of regions and regional development, our attention is centered on the valley region. Other groups are concerned with broad economic regions, urban-centered regions and frontier regions. One of our problems certainly is the relations between these different kinds of regions.

Third, within valley regions we are concerned with scope as distinct from *governmental processes*, since

these are the business of Workshop B. Although we must be careful not to invade the domain of our sister Workshop, I suggest that we must reserve the right to consider governmental processes as they relate to scope.

Fourth, the discussion guide suggests that our objective is: to seek out the circumstances under which the river basin region becomes the significant region in multiple resource planning and development. There is an implication here, I think, that the river basin idea needs some qualifications. This, in my experience, is rather a new and a refreshing idea. I am delighted to interpret this part of our charge as an invitation to a more searching inquiry about river basins—one that goes beyond abhorring, on the one hand, our failures to use the river basin as the unit of planning and development, and resisting, on the other hand, any effort for functional organization of river basins.

These terms of reference provide, it seems to me, two significant guideposts. (1) We are primarily concerned with function and area as they interrelate to determine scope. (2) We are seeking the variables that influence function and area to determine scope, and in turn to influence the role of river basins in development.

To follow these guides will certainly be more difficult than to continue to assert our belief in, or reaffirm our opposition to, integration of river basin

development. However, I am sure that it will be more rewarding, even if we make only a halting start.

In order to provide something as concrete as possible for discussion, I propose, as an experiment, five type-situations in which the scope of *functions and area* of multiple resource development within river basins are different. These type-situations may, I believe, lead us to recognize different patterns in the relationships between river basins and other development areas and programs which may be appropriate.

The logic of these five type-situations is based upon my interpretation of the nature of the river basin problem, and of the significance of certain characteristics of river basin development. These interpretations should be made clear, because some of you may want to challenge them.

#### *The nature of the river basin problem*

When I refer to the so-called *river basin problem*, I am thinking of the frictions and conflicts that usually arise when we attempt to organize our multiple purpose resource development on the basis of valley regions. An understanding of this problem requires some understanding of its origin.

For a large part of the history of man, the various water development services—domestic water supply, waste disposal, water power, transportation, flood control and recreation—were provided by the river with relatively little assistance from man. Originally, water development technology was primarily concerned with capturing some one service of the many which a stream had to offer. These activities were carried out by single purpose utilities and local agencies which either produced hydroelectric power, controlled floods, supplied water to irrigators, or captured and distributed water for domestic and municipal purposes.

As long as the intensity of demand did not overtax the natural potential of a hydrologic unit, this single purpose independent approach was quite adequate. However, as the pressures on major supply sources intensify, our emphasis shifts from merely capturing individual water services to methods of establishing integrated control over the flow of water in a hydrologic unit in order to increase the net amount of services that can be made available. This integrated control I refer to as *water management*. Without integrated control we are apt to get conflicts in use, and friction and controversy among users.

This shift from individual service development to water management and control has caused development efforts to be focused on the river basin instead of on a particular service. In short, in those situations requiring integrated control of flow through water management, the interrelations between hydro de-

velopment and recreation in a given basin appear more immediately compelling than the ties between hydro in one basin and hydro in another; or between recreation in one basin and recreation in another.

Although the strength of these new interdependencies has brought a demand to integrate planning and development within the basin region, our established institutions are not prepared to fulfill that need. In the United States we have increasingly turned to the federal government for leadership; however, this course has raised new problems of intergovernmental relations which I am not sure we have fully comprehended, much less solved. In our efforts to provide river basin integration we have sought some kind of river basin agency. However, assignment of comprehensive development responsibilities to river basin agencies sets up many political and administrative stresses and strains to which, as yet, we have found no satisfactory solution. Consequently, we are frustrated; and we complain of "lack of co-ordination" and "divided responsibility."

This then is the problem to which we address ourselves. We are caught in a dilemma. On the one hand we increasingly recognize the validity of the slogan *One River, A Single Problem*. But on the other hand, when we attempt to unify development operations in the basin, we are confronted with new kinds of natural, social, economic and political relationships which need to be understood and accommodated if frictions and conflicts are to be avoided.

The solution is not to be found in the independence of the river basin, but rather in setting up channels of interaction between river basin development and other related aspects of human affairs.

#### *Four characteristics of river basin development*

Four characteristics of river basin development have major significance to our problem. These are elementary in description, but profound in their influence.

1. The first, is the fact that water is what gives significance to the valley region. There is nothing magical about a river basin as a region, except as flowing water makes it so. We cannot lose sight of this fact in our attempt to nail down the scope of multiple resource development in river basin regions.

2. Second, although the physical characteristic of water is the unifying force of the river basin, the real significance of the interrelations stemming from water flow is found in the constraints that they impose upon human endeavor. We have come to recognize that development action affecting water flow or quality at one point has an infinite number of potential consequences at other points and upon other development agents. However, at the same time we must recognize that these *spillover* effects are

significant only to the extent that they impose significant social or economic consequence upon someone other than the developer. When these spillovers have critical external socio-economic consequences, there is a natural and proper demand that they be *internalized*. That is, that they be brought together through organizational forms and procedures so that the development agent is confronted with all the costs and all of the benefits of any contemplated site development. One way—the obvious way—to do this is to give some one agent the responsibility for the whole basin.

But, as we have seen, a river basin agency is not a sufficient solution. It solves one problem only to create a host of others. Therefore, the idea of a river basin agency requires qualification. We need to understand the relationships required between the river basin and water development on the one hand, and other areas and water-related functions on the other.

The economists' concept of spillovers or externalities and the need to internalize is useful in refining these relationships. It is useful in discovering *when* the interdependencies imposed by water are important, and it is useful in determining the kinds of relationships that will satisfy the need.

By way of summarizing this second characteristic, I would say: The extent to which integrated physical control is necessary depends upon the extent to which spillovers stemming from development proposals have critical social consequences. For example, even though a hydro development on the headwaters of the Peace River has the same physical consequences downstream as in the Columbia, for example, these may not have enough economic and social consequences to justify attempts to internalize by a complicated integrated development scheme.

3. A third significant characteristic is that river basin developments may have—in fact usually do have—great socio-economic importance outside the valley region. Hydroelectricity may be marketed in load centers without regard to basin boundaries. Water diversions from one basin to consuming centers outside are increasingly necessary. And the market area for recreation is contained, not by physiography, but by time and mobility. In short, many of the socio-economic consequences *spillover* the basin's boundaries.

In some cases, these spillovers are handled by marketing contracts. But for such things as recreation, flood control and pollution abatement, simple consumer contracts do not quite fit the bill. However, I suggest that more needs to be done in exploring innovations in contractual relationship which might be appropriate for these kinds of service areas. There may be value in drawing the distinction as sharply as possible, whenever possible, between the

river basin as the producing unit—the factory—of multiple services and the service areas. To the extent that contractual relations can be employed... this distinction can be made in practice and will greatly ease the area conflicts now apparent.

4. Finally, let me describe the fourth characteristic of water development, which I believe has great significance to the question of scope. This is the fact that basically river basin development is a means to public-supported objectives, rather than an end in itself. In our enthusiasm about the advantages of comprehensive river basin development and watershed management, I sense that we, in the States at least, often overlook this fundamental point.

The objectives of public water development are diverse, spreading all the way from providing a wide range of direct water services like power, navigation, water supply, flood control and recreation to achieving indirectly certain social goals, among which may be regional economic development, regulation of private entrepreneurs, or improving environmental amenities as in the sprawling urbanized areas. Of more significance than their diversity, however, is the fact that each water development objective (with the exception of providing water supply) can be achieved by other means than by water development. For example, steam power may substitute for hydro; the development of other types of carriers may substitute for navigation; there are other measures than water management to avoid the individual and social costs of floods; and certainly there are other ways of providing outdoor recreation experience than by water developments. Likewise, economic development may be induced by other improvement measures than those directed to water resources.

Because the accomplishment of social objectives sought are of first importance to society, government not only does, but must, focus its first attention on goals. In the goal context government is concerned about need, and about relative cost and relative achievements of alternative means of fulfilling the same objective. If government is to make its primary investment decisions in terms of goals, this implies serious limitations in the role of the river valley and in the function of river basin development in regional development. But just what these limitations are and just what elements of river basin development must be related to a given regional development, will depend upon the particular combination of goals sought from water in any development program and the extent to which government has provided goal-oriented planning centers.

#### *Proposed type-situations*

The foregoing discussion of factors which have a bearing on the question of scope, is by no means exhaustive. However, the few points that we have



explored suggest five type-situations which may serve experimentally to sharpen the distinctions in the scope of the river basin and its relations to other regions.

1. *When the river basin is not a hydrologic unit.* When this situation prevails, obviously the river basin has no particular significance. This situation is illustrated in most of the drainage systems across the Great Plains in the U.S. Particularly in the southern section of the plains, the flow from the mountains is largely dissipated in the arid reaches before downstream channels are replenished by the rainfall of a more humid climate.

2. *When, in a hydrologic unit, development pressures are not sufficient to cause socially significant consequences from independent developments.* In these cases, there may be little need for a completely integrated basin development. There are many places, I suspect, that for the present and for the visible future, this kind of situation will pertain in varying degrees. Unless comprehensive integration is clearly required, more may be gained by depending upon *ad hoc* adjudication of externalities than by establishing formalized machinery for integrated basin planning and development.

These two situations are relatively simple since in neither case do they assume integrated water development within the basin region. My other three types all assume that the river basin is the pertinent hydrologic unit, that an integrated water development is desirable and thus the river basin is significant for water management. Under these assumptions three further types can be identified.

3. *When the primary objective of integrated development is to provide a group of specific water services to meet an expressed demand, but the basin is not dominated by a large urban region.* Here river basin development may well dominate as the function, and the valley as the significant region. Relationships to other areas will be largely those in marketing and distributing services and products. These relationships are basically those of the producer and the consumer. This suggests that the more these relationships can be established through producer-consumer contracts, the better we can avoid jurisdictional conflicts between the river basin and areas outside that have an interest in its development benefits. Most of our large river basin developments in the U.S. represent, in large part, this type.

4. *When the primary objective of integrated development is to induce economic development.* In these cases, other functional considerations (i.e., economic development) and other regions, such as some broader economic region, may more appropriately dominate the development decision.

If river basin development is to be the means to obtaining economic development, it is evident that

the basin development must follow the lead of some planning center other than that suitable for water development *per se*. Here we are assuming that whatever governmental authority supports the economic development effort provides some such center where an over-all view is given to the objective of economic development and a water project can be evaluated in the context of the total program. In such cases, ideally, the scope of the river basin may appropriately be limited to (1) determining the development potential of water and related resources and (2) installing and operating the development measures decided on.

In actual practice, distinguishing this type from the preceding type may be difficult. The clarity of the distinction will depend in part on the extent to which there are dominating economic regions distinct from river basins, and in part on the extent to which government has a comprehensive policy and program of economic development.

5. *When the river basin is economically and socially dominated by a large urban region.* Here, the river basin, as in the preceding type, may become a tool to implement decisions made in a different regional context and on the basis of other than water management considerations. Here again, it is important to emphasize the scope of the basin's concern to be that of production. In this situation, however, the inherent relationships in maintaining that role are infinitely more complicated than in the two preceding types. First, because the services being rendered by water development are more likely to emphasize water quality, recreation, public water supply and various environmental amenities, all of which are not readily measurable nor vendible. And second, because the location of water development installations will require close co-ordination of their spatial relations with other public facilities.

Here then we have five type-situations to which the concept of river basin development must adjust. We have also explored some of the underlying ideas that support the identification of these particular types. Granted that these are "idealized," I hope that they will provide some grist for our discussion mill.

#### **Discussant (Mr. RICHARDSON)**

Although we in Ontario consider that the work of river valley development has been very successful in our own province, it is not my intention to explain this in detail, because the area where this work has been carried out has certain features which are quite different from other parts of Canada and very different indeed from the type of river valley development which we are called upon to discuss in this Workshop. One important fact regarding the success of the Authorities in Southern Ontario is that they

are located in the most thickly populated section of Ontario; in fact, the area in which these Authorities have been established contains approximately one-tenth of the whole population of Canada.

In contrast to the area where the Ontario Authorities are located I would refer you to the watersheds which are mentioned in the Background Papers as samples in Canada which should come under review by this Workshop, and I wish briefly to remind you of the size and extent of these, if for no other reason than to emphasize how different they are from the Ontario situation.

The Nelson River watershed is an area of 410,000 square miles and has tributaries in Saskatchewan, Manitoba, Ontario and the United States. The Fraser watershed has an area of 90,000 square miles and covers approximately one-quarter of British Columbia. The St. John River watershed has an area of 21,300 square miles, with tributaries in Quebec, New Brunswick and the State of Maine and, incidentally, is about the same size as all the Authorities in Ontario combined.

However, to give guidance in reaching some conclusions regarding the subject under discussion, I think it would be worthwhile to paraphrase briefly the important sections of the Act which, in my opinion, have made this program a success in Ontario. These are as follows:

1. Authorities are formed only at the request of the municipalities in a watershed. In other words, the people must take the initiative.
2. An Authority is a form of commission—that is, a body corporate, and appoints its own officers and hires its own staff.
3. It must initiate its own schemes concerning flood control, land use, forestry, wildlife, parks, etc., within the framework of The Conservation Authorities Act.
4. It has power to expropriate land.
5. It engages its own engineers or other specialists.
6. It requests and receives the assistance of other departments of the government, particularly Agriculture and Lands and Forests, for assistance in carrying out its schemes.
7. It raises its own funds from the taxes of the member municipalities and receives grants, mostly from the Ontario government, and in special cases from the federal government.

#### Discussant (Mr. TRUERMNER) (Summary)

Mr. Truermner began by noting that the objective of the Conference was popularly understood to be resource management while the implications for resource development were often ignored.

He defined a major river basin as being interpro-

vincial or international, such as the basins of the Nelson and Assiniboine Rivers, and a tributary river basin as being entirely or nearly entirely within a province, as the basin of the Minnedosa River. Jurisdictional aspects had to be taken into account when considering major river basins since provincial or international boundaries are crossed.

Mr. Truermner observed that there is no effective substitute for water in the growth of plants and the processing of food.

"To obtain the optimum development in the Prairie Region, development of water resources is essential," he said.

Recent industrial activity in Manitoba to a large extent, has been associated with agricultural activities. As a result, the demands on water resources are continually expanding. For example, a processing firm in south-central Manitoba requires more than one-half million gallons of water a day for its operations. If the 4,000 acres of potatoes that supply this plant had to be grown under irrigation, which is a future possibility, tens of millions of gallons of water a day would be needed at peak periods in the growing season.

Mr. Truermner told how Manitoba had chosen seven rural development regions. These regions were neither broad economic regions nor did they respect watershed boundaries. They had been selected because of transportation patterns, dominant natural resources, trading areas of towns and most importantly, because they had "working circles" or communities of interest which provided their initiative for development.

He defined four essential elements of a multiple resource river program.

1. Appraisal of the broad regional water needs by the use of extension personnel such as agricultural representatives, community development representatives, rural sociologists, economists, etc., in conjunction with engineers and property assessors. In this manner, the desired scope of water development efforts can be realized.
2. Similarly, water allocations should be made on a basis whereby the regional social and economic effects of water development are more closely accommodated in an equitable manner.
3. The appraisals and allocations should take into consideration the merits of alternative public investments in the over-all resource development field.
4. Related problems of stream pollution, waste treatment and re-use of effluent should be evaluated in the broad picture. Consideration should be given to an agency which has joint responsibilities for water resource development and water pollution since both are uses of water in one form or another. This is particularly needed when a central government authority has separate administration and regulations for water allocations and sanitary standards.

## DISCUSSION

*Assumptions*

The following assumptions were agreed upon by the Workshop:

1. The region is defined by the limits of a river drainage basin.
2. This kind of region may include any of the following:
  - (a) A drainage basin in which water is the major economic resource;
  - (b) A drainage basin in which water is not the major economic resource;
  - (c) A drainage basin with an established urban center or centers;
  - (d) A drainage basin without an established urban center or centers.
3. This kind of region may contain, in whole or in part, urban and rural municipalities, *ad hoc* functional organizations and may involve one or more provincial jurisdictions, the federal authority and co-operation across national boundaries.

*Lead-Off paper*

There were opposing views expressed on the general need for organization on a river valley basis for resource development. Reference was made to particular watershed authorities which were particularly successful in operation and which were formed by federal-provincial co-operation. It was conceded that a need for the river valley approach would appear to exist in specific instances where water as the central feature has to be managed and effective planning and co-ordinating machinery is not already available to perform this.

Where the river valley approach is contemplated the sociological and economic implications have to be taken into consideration within and beyond the immediate region. In early planning, any bodies which might be set up should be of an advisory rather than administrative nature.

*Subgroup discussions*

In two subgroups, the Workshop considered the following questions:

1. What problems related to the control and use of water can best be handled within river basin regions? While it was agreed that a drainage basin or a number of related basins can be useful planning units for such problems as flood control, navigation, water power, recreation, stream pollution, irrigation, etc., no single answer appeared possible.

The problems that might be covered by any valley agency would depend on individual circumstances.

2. Under what circumstances is the watershed region an effective framework within which to:

- (a) Plan for the optimum use of resources? It was considered that any valley agency could contribute toward optimum development of resources but should not be charged with responsibility for the over-all planning.
- (b) Act as a planning and development agency for new communities required by resource development? There was a diversity of views expressed on this point and no general agreement could be reached.
- (c) Assume general land planning functions for urban-centered areas? It was not considered that the valley agency should assume land planning functions for urban-centered areas.

3. What are the essential elements of a planning program for multiple resource development? It was agreed that the planning program should include the following phases:

- (a) Investigations and surveys by qualified specialists (including biologists, hydrologists, etc.) from various fields of science and engineering working in close co-operation on:
  - (i) Resource inventory and problem assessment;
  - (ii) Economic development potential;
  - (iii) Environment, potential in physical setting and community patterns;
  - (iv) Engineering problems and alternatives.
- (b) The planning program should include the establishment of basic objectives.
- (c) Consultation is necessary with representative groups in the region, both private and public. It was pointed out that in the past some individuals such as farmers and fishermen have been ignored by the administrators in some valley development programs.
- (d) The preparation and preliminary programs should include:
  - (i) Objectives;
  - (ii) Works and methods;
  - (iii) Costs;
  - (iv) Time table.
- (e) After satisfactory consultation with the private and public groups, an appropriate authority could be formed after endorsement by the governing bodies within the basin.



*Recommendation*

A large majority of the Workshop agreed that planning and advisory committees should be set up by the appropriate governmental authority when integrated development of river valley regions is contemplated. Such committees would comprise representatives of science, technology, law, industry and the public. The functions of such a committee should

include all phases of planning listed as essential elements of a planning program for multiple resource development.

The planning and advisory committee would be responsible for recommending whether or not the particular river valley region would be further developed within the existing legislative framework or under a formally constituted river valley agency.



# *River Valley Regions Workshop B*

THURSDAY, OCTOBER 26

The evolution of government processes for multiple purpose development of river basins.

- Chairman: J. T. ALLSTON, Director of Rural Planning, Newfoundland Department of Municipal Affairs.
- Co-Chairman: G. ROSS LORD, Chairman, Metropolitan Toronto and Region Conservation Authority.
- Lead-Off Speaker: J. W. MACNEILL, Executive Director, South Saskatchewan River Development Commission.
- Discussants: JAMES W. WILSON, Executive Director, Lower Mainland Regional Planning Board of British Columbia.  
ERIC GOURDEAU, Assistant Director of Planning, Department of Natural Resources, Province of Quebec.
- Rapporteurs: J. R. SABOURIN, District Engineer, Department of Northern Affairs and National Resources.  
H. N. LASH, Deputy Commissioner of Planning, City of Toronto Planning Board.

## **Lead-Off Speaker (Mr. MACNEILL)**

I would like first of all to make a few general comments on the existing pattern of water-resource administration and on some of the current and growing problems in water management in Canada. Then I propose to look at a few examples of attempts to achieve a more comprehensive approach to water development. And, finally, I would like to discuss a few administrative forms that might be appropriate vehicles for local, provincial and federal action in this field.

### *Water resource administration in Canada—current pattern*

A study of Mr. Patterson's paper on the "Administrative Framework for Water Management" in Canada reveals that over the years this framework has become increasingly complex at all levels. This reflects a number of factors which gave rise to the birth of the present framework and have conditioned its later development. Some of these factors are fundamental and must, I think, be kept to the fore in any assessment of the existing framework and in suggesting modifications to accommodate the evolving concepts of multiple purpose planning, development and management of our river basins.

Among the more important of these factors, I would mention the divided jurisdiction over water which was imposed by the BNA Act, the non-coincidence of political and natural boundaries and the major differences in the physical resources and the social and economic history of various parts of the country. In addition, the administrative framework has been influenced profoundly by the rapid development of our economy and by changes in the broad social and economic goals of our society which have been accompanied by a gradual shift in political philosophy which accepts—if not demands—a large degree of government intervention as a means to achieve these goals. Finally, a technological revolution in the field of water management has not only made it possible to increase the utilization of our resources but also has often made it necessary to modify the administrative framework.

These and other factors have resulted in a wide variety of approaches to water management in Canada.

Mr. Patterson notes that in each *province* there are several agencies involved in the regulation, planning and development of water resources. Although there are similarities, each framework differs from the rest reflecting the background of the particular province.



At the federal level, a myriad of agencies have grown up since 1867 to discharge the specific federal obligations under the BNA Act. Although most of these agencies are involved either in data collection or regulation, some are responsible for direct participation in planning and development.

The need for co-ordination between federal and provincial agencies has been recognized and various arrangements have been tried. Mr. Patterson notes seven types ranging from federal-provincial agreements on data collection and on the construction and financing of projects through to *ad hoc* planning agencies and permanent co-ordinating agencies.

Now how effective is this very complex administrative framework? How well equipped is it to apply modern concepts, skills and technology in planning the best use of our water and associated resources to meet the increasing demands that will be placed upon them in the future? Judging from the analysis by Kristjanson and Sewell, it would appear that there are many serious deficiencies in the existing approach to water development and management. Attempts to resolve problems have run into differences of opinion on the interpretation of the BNA Act or are weakened by ill-defined local, provincial and national goals and a lack of clear federal and provincial policies in many areas, including cost-sharing. This makes inevitable indecision, delay and protracted debate on who should take the initiative.

In view of this, it would appear that there is a growing need both for a definition or redefinition of responsibilities and policies within and between the various levels of government in the field of water development and for additional, perhaps major, changes in the administrative framework for water management in Canada at all levels. Although it is the question of administration that primarily concerns us in this Workshop, it's virtually impossible to consider this without at least implying policies and some division of responsibilities between levels of government.

#### *Comprehensive multiple purpose river basin planning*

However, considering the administrative framework, I feel that, among other things, any changes should serve to facilitate the planning of our water and associated resources on a regional basis, recognizing that, in general, the river basin is the natural and desirable unit for such planning. In their paper, Fox and Craine suggest several criteria for effective water resource administration. In brief, they suggest that organizational arrangements should facilitate a democratic choice of objectives, should make it possible to focus into development decisions all of the critical costs and benefits—external as well as

internal; should facilitate the appraisal of proposed water development in comparison with other alternatives of achieving the same objectives, and finally, should be capable of marshalling relevant modern technology from both the physical and social sciences to the problems of water management.

I feel that these criteria are sound. No doubt the list could be expanded. The task, in all parts of Canada, it seems to me, is to devise an organization that will more or less meet these and perhaps other criteria and at the same time be consistent with the constitutional and other factors that we have to contend with.

#### *Possibilities for multiple purpose development with river basins*

I would like now to look at a few examples of attempts to achieve a more comprehensive approach to water development.

##### *1. The Canadian experience*

Although the Canadian experience offers relatively few good examples, some steps have been taken leading toward a more comprehensive approach. These have taken several forms but have generally involved readjustments in the administrative framework in order to improve co-ordination within the provincial or federal governments, to provide a vehicle for co-operation between the federal and one or more provincial governments in planning, financing and developing water resources, or to establish new federal and provincial agencies more or less equipped to carry out project formulation and development on a multi-purpose basis.

I have time to mention only a few examples, but I hope others will be brought out during the discussion today.

At the provincial level, attempts to improve co-ordination between agencies have varied in breadth and depth. In some cases a new agency has been set up to carry out the functions of a number of existing agencies. I understand that the Ontario Water Resources Commission is an example of this. In other cases, a new agency has been established to co-ordinate the activities of existing agencies. An example of this is the South Saskatchewan River Development Commission.

Steps have also been taken, in some provinces at least, to enable the planning and development of multi-purpose schemes, usually on smaller watersheds or tributaries of major rivers.

Turning then to the federal government we find that it too has adopted a number of devices to improve co-ordination. Judging from Mr. Patterson's paper these have not been as far-reaching as some of the provincial attempts. The federal government

has also established agencies more or less equipped to carry out comprehensive planning and development, such as the P.F.R.A. in Western Canada.

As many of you will know, this agency was established in 1935 with two principal objectives: to assist in repairing the damage resulting from drought and soil drifting in the Prairies and to assist in overcoming the problems of agricultural readjustment resulting from the economic depression of the 30's.

It carries out its activities through several major programs, in each of which water development plays a key role. And in recent years, it has undertaken the planning and construction of a number of major irrigation projects.

Now, although the P.F.R.A. has done a magnificent job in Western Canada in the general field of agricultural rehabilitation, I think it is recognized that as a vehicle for comprehensive planning and multi-purpose development it suffers from a number of limitations. These can probably be traced in part at least to the BNA Act which limits federal jurisdiction to navigation and fisheries and, concurrent with the provinces, agriculture. As a general rule, P.F.R.A. has had to limit itself to water development projects in which irrigation, stock watering, or some other agricultural use is a major, if not primary, objective.

This has several important implications. It means that in the case of a large project like the South Saskatchewan, the P.F.R.A. can carry out project formulation on a multi-purpose basis, but only up to a certain point. Beyond this point, the province must step in to do the final planning and development of the power, recreation and other non-agricultural benefits.

It may also mean that the P.F.R.A. or any wholly federal agency could not undertake the preparation of a comprehensive plan for an entire river basin, since many of the individual projects involved, although multi-purpose, may not have irrigation or agricultural benefits. If this is true, then in the projects it can plan it is not in a position to effectively consider their external economies and dis-economies.

At the federal-provincial level several arrangements have been tried to achieve co-ordinated planning and co-operative development. One type that I would like to dwell on for a moment is the agency established to perform specified functions on a continuous basis. An example of this is the Prairie Provinces Water Board.

This Board was established in 1948 and made up of one representative from each of the Prairie governments and two, including the Chairman, from the federal government. It was charged with recommending the best use to be made of interprovincial waters in relation to associated resources, and recommending the allocation of interprovincial waters be-

tween the provinces concerned. Its recommendations must be approved by each of the four governments involved before they are effective.

This Board has been very useful in providing a medium for the exchange of views and information and a large number of useful studies have been made under its auspices.

However, I think it is generally conceded that the Board has been, and is, handicapped in many ways. A comprehensive plan of development is necessary in order to determine the "best use of the waters of the basin," and a rational allocation of water. The Board has recognized this on several occasions, the latest being in July, 1960, when it recommended preparation of an integrated plan for the development of the Saskatchewan-Nelson basin.

Since the Board has advisory powers only, it can't be too effective in planning, in co-ordinating development or in co-ordinating the operations of reservoirs located on common waters. Nor would it be effective in resolving conflicts of use if one province proved unwilling to accommodate the wishes of another.

## 2. *The American experience*

Turning now, briefly, to the American experience, we find that it offers a wider variety of examples of attempts at basin-wide multi-purpose planning and development. These include the three centralized federal agencies; the Corps of Engineers, the Bureau of Reclamation and the Soil Conservation Service, as well as several regional interagency committees and commissions and, of course, a regional water resources agency—the famed T.V.A.

The T.V.A. is often cited as the ideal form of organization for regional development. Others claim that it would be almost impossible to duplicate in the Canadian setting without major changes in our Constitution, or special arrangements to get around it, and without a major upheaval in the existing administrative framework.

Fox and Craine assess T.V.A. on the basis of the criteria that I mentioned earlier. First of all, they find that in some respects the greatest success of T.V.A. has been the universal support it has enjoyed within the basin and the extent to which it appears to be responsive and responsible to the people of the region. However, they note that this is a much debated point.

Second, they find that with its broad charter, its geographic area for development covering an entire river basin, and a power market area extending well beyond the basin, it is able to take account of physical interdependencies, economies of scale and the indivisibility of the water product. They feel that



it has done an unusually good job of integrating the operation of interrelated water management facilities.

Third, however, they find that, as T.V.A. now operates, there is no effective means of assuring consistency with national policies or of appraising alternative policies and programs designed to achieve the same objectives. At the same time, they note that there has been no particular compulsion to do so. If a new Valley Authority were established, the question of integrating regional policies with national policies would pose a serious problem and they feel that this is probably the major weakness of the Authority concept.

Finally, they find that although T.V.A., like other water management agencies, tends to be dominated by the engineering tradition, it has been more sensitive to the contribution of other disciplines than other water agencies.

In brief, they conclude that T.V.A. has been a successful water development and management institution.

*Administrative forms appropriate for river basin development in Canada*

One could go on and cite many other examples, but I would like to instead consider a few of the administrative forms that may be appropriate for river basin planning and development in Canada.

This is obviously a very large and complex question to which there are and can be no ready answers. Given the broad scope of functions involved in planning the water and associated resources within a river basin, the huge extent of some of our larger basins, the differences across the country in settlement patterns, population density, economic development and pressures on water resources, and given the rigidities built into the existing framework and the limitations imposed by our Constitution, it is clear that a wide variety of administrative forms will be required, each one tailored to fit particular conditions and objectives. Recognizing this, it is extremely difficult to generalize. Yet, we must generalize since our time is limited and since we have been asked to consider the nation as a whole. And this can be useful provided we bear in mind that every generalization would have to be modified in detail to fit a specific situation.

There are several ways in which this question might be approached. I would suggest that we approach it in perhaps two steps. First of all, we might try to identify, in a very general way, appropriate geographic units for administration in relation to the level or levels of government involved.

Second, we might consider the various functions—again in broad terms—that should be performed by the administrative framework at each level and the

administrative form or forms that appear to be best suited to perform these functions.

As a first step along these lines, I would like to suggest three types of units in relation to the level of government primarily involved.

At the municipal-provincial level, units which include or coincide with an urban-centered region or a group of interlocking urban-centered regions. I am thinking here of small watersheds, tributaries of major rivers, or components of major basins which include a number of closely related small watersheds, which for some physical or economic reason can be segregated from the main basin.

At the provincial level, units which lie entirely within a province. Here, I would include all the units I have just mentioned but which do not have a population or structural basis for municipal involvement. In addition, I would include larger basins which lie entirely within a province and, in some cases, provincial sections of major interprovincial and international basins.

Finally, at the federal-provincial level, I would include units which include interprovincial and international basins.

Now, as you know, several administrative forms have been suggested as a means to achieve a greater measure of comprehensive water resource planning and development at each of these levels. I will mention only a few.

At the municipal-provincial level, I feel that consideration might be given to a municipal based, representative form of administration. This could take the form of a Conservation Authority, along the lines of the Ontario Authorities, with provision for involving local interest groups of various kinds in an advisory capacity. Whatever the form, it would have to be established under a provincial statute, and it should be responsible, directly or indirectly, for appraising the existing and forecasting the future needs and problems of its area in so far as they place demands upon or derive from water based resources. It should also be responsible for assessing the water and associated resources of its area and preparing a plan outlining the conservation measures that should be taken in those fields important in its area.

It is unlikely that local Authorities of this kind would be able to marshal the professional skills required to undertake this work. Therefore, there would probably have to be some arrangement under which they would obtain this service from some appropriate provincial or regional agency. In fact, I think this would be desirable since provincial or basin-wide goals might be involved making it desirable to evaluate alternatives within a broader context, and to ensure co-ordination between plans of adjacent Authorities and between their plans and plans for the over-all management of the basin. In-



centive could be the provision of this service at no cost to the Authority or through some cost-sharing arrangement.

To the extent that provincial or basin-wide goals are involved, arrangements to share in capital and the other costs of development would be appropriate. By varying the policies under which financial assistance could be obtained, the province could exercise some control over the sequence and form of development.

Although this approach has much to commend it, provided effective machinery exists to assist local Authorities, I think it does have certain weaknesses. For one thing, municipal governments are, as a rule, notoriously disinterested in any project that does not promise immediate and direct benefits. Given the make-up and structure of local government, with its relatively narrow outlook and its concentration on day-to-day problems, it may be difficult to interest them in broadly based multi-purpose conservation schemes.

At the *provincial level*, perhaps because I am closer to it, the situation appears much more complex and hence it is more difficult to generalize. Many of our major provincial and interprovincial basins are in the north, are sparsely populated and beyond the reach of economic development at this time. The primary task here would appear to be one of data collection with perhaps some management for fish and wildlife.

However, considering those basins which are populated and which have or will experience development within the foreseeable future, two forms suggest themselves: River Basin Commissions and River Basin Authorities.

In most provinces there are several agencies involved in water resource planning and development of one form or another. Over the years, many of these agencies have acquired large staffs with a high level of administrative and technical competence in their respective fields. Moreover, some of these agencies, for example, our public power corporation, are relatively huge, with widespread interests and are firmly imbedded in the administrative framework.

If one were to introduce a Regional Authority, along the lines of T.V.A., into this administrative framework, however desirable in some ways, it would undoubtedly cause a major upheaval and, among other things, would require some considerable duplication of existing administrative and technical resources; duplication which a province may not be able to support. Where this is the case, it may be desirable to consider instead a commission form of administration.

A Regional Basin Commission, as I see it, would be established by provincial statute and could be

made up entirely of independent members or a combination of independent members and representatives of the major provincial agencies involved in water development in the basin concerned; for example, the power, irrigation and natural resource agencies. There could also be provision for representation of local Conservation Authorities and other interest groups, perhaps on advisory boards. The Commission would be responsible to the government through a Minister, preferably, I think, the Premier or the Provincial Treasurer. It would require a small staff highly competent in each of the fields of concern to the Commission.

Like the Conservation Authorities at a lower level, the Commission would be responsible for assessing the existing and forecasting the future needs and problems of the basin or the social and economic unit within which the basin lies. It would also assess the water and associated resources of the area and prepare an integrated plan or plans which could be used as a guide for future development and against which concrete proposals for development could be evaluated.

This work would require very close co-operation with and considerable assistance from the major provincial development agencies involved. In the case of intraprovincial basins the Commission could achieve this independently, except in so far as national goals or interests were reflected in the plans. However, in the case of interprovincial or international waters, federal-provincial and interprovincial arrangements would be required to co-ordinate the Commission's plans into the framework of a basin-wide plan. This would be essential to take into account external economies and diseconomies and for other reasons.

A Commission of this kind would obviously require some very strong powers, derived from legislation, both to prepare these plans and to oversee their implementation. Among other things, the Commission could be responsible for the control of all water rights and the allocation of water within the basin. Rights would be granted only for projects that met the requirements of the over-all plan and obtained the approval of the Commission.

Although a Commission along these lines may be the answer under certain conditions, it poses a number of problems. For one thing, how do we reconcile traditional concepts of Cabinet government with the requirement that government agencies clear their policies and plans through a semi-independent Commission? It also falls short of meeting some of the criteria for a sound water resource administration mentioned earlier. In terms of these criteria some form of regional basin Authority along the lines of T.V.A. would appear to be the only answer. And it may be possible to consider this for some of the

less populated regions that are just on the threshold of rapid development and where existing institutions are not too firmly imbedded.

At the federal-provincial level, the existing institutional framework is, if anything, more complex, and we have to keep in mind the limitations imposed by the BNA Act. However, it is in this area that the need is perhaps the greatest. Before the turn of the century most of our larger accessible water resources will be developed. Most of this development will be on interprovincial or international basins and its benefits will be national in scope. Financing the planning and construction of this development may well be out of reach of most provinces and in any case, the sequence of construction and the operation of projects in one province will have to be integrated with that in other provinces if a fragmented approach is to be avoided and maximum benefits obtained.

As at the federal-provincial level, several administrative forms will no doubt prove necessary. I would like to mention two. The first is a corporate form of administration, established by federal-provincial agreement or common statute and with provision for federal and provincial representation and finance. Such a corporation would be responsible for planning and developing the water and associated resources of the basin to achieve their best use, and would be authorized to engage in and promote all aspects of water and associated development and management including the marketing of services therefrom. In effect, it would be a regional basin Authority along the lines of T.V.A.

Judging from Mr. Laskin's paper on the "Jurisdictional Framework for Water Management," a federal-provincial corporation of this kind should not be unconstitutional. However, if its jurisdiction extended over two or more provinces I can see it encountering some extremely serious problems in financing, planning and pricing policies to mention only a few.

Another form that has been suggested is a commission type of administration, again established by federal-provincial agreement or common statute, and again with provision for federal and provincial representation and finance. Such a Commission, as I see the concept, would be responsible for the preparation and adoption of an integrated plan for the development of the water and associated resources of the basin. It would also be responsible for the evaluation of development proposals within the framework of the over-all plan and for their approval. In order to do this, it would have to be responsible for the control of water rights within the basin, and the allocation of water to approved projects.

Although a federal-provincial Commission along these lines may be an improvement over existing federal-provincial co-ordinating bodies and should prove more acceptable than a federal-provincial corporation, I feel that it, too, would have to overcome some serious obstacles. A province might be prepared to delegate control over water to a semi-independent provincial Commission and subordinate some of its agencies to it. But would it be prepared to do the same in the case of a federal-provincial Commission? Unless provinces are so prepared, I see little hope of a greater measure of integrated planning and integrated development of interprovincial basins than we have today.

#### Discussant (Mr. WILSON)

##### (Summary)

Mr. Wilson observed that it is not possible to divorce the questions of operating procedure and policy, and organizational structure. Awkward structures can work, as exemplified by London, Ontario, while ideal structures fail if there is insufficient administrative skill or determination to make them function.

Mr. Wilson then referred to the Tennessee Valley Authority. This has been cited as "an ideal form" for river valley multiple resource development but it is questionable whether it is the *form* of organization that has made it a success. Mr. Wilson suggested that the essence of T.V.A. was not in its structure but in the following points:

1. The Authority had all water responsibilities in one "package," together with power to provide good land management.
2. The T.V.A. Act specified the broad human goals as well as specific objectives and gave it power and funds to deal with both appropriately.
3. In action the Authority decentralized its operations as much as possible to the local level.
4. The Authority was able to realize the incremental and incidental benefits from water development.
5. The Authority was directed to work through as many local and state institutions and agencies as possible, by doing so strengthened these institutions, thereby contributing to the administrative competence of the whole region.
6. The Authority had on its staff good people, dedicated people.

Mr. Wilson also noted that the T.V.A. approach had been criticized because it did not provide for co-ordination between river valley regions if more than one such agency were developed. He pointed out that this was a fault in the national structure for resource planning, not a fault of the T.V.A.

In concluding, Mr. Wilson turned to the suggestion



of Mr. MacNeill that urban municipalities within a region should be represented on the resource development agencies. Mr. Wilson agreed with this in principle but pointed out that there is often such a fracturing of urban area into separate municipalities that care in arranging representation is necessary. In many cases it would be unwise to adhere to the *status quo* of municipal government arranging representation on the resource development agency.

#### Discussant (Mr. GOURDEAU)\*

Having read the main part of the reference material which was distributed to us before this Conference, particularly the material to which Mr. MacNeill has just referred, I asked myself a question which has bothered me ever since, and which I want now to put to this Workshop.

I wonder if these authors have not led us a little astray. Their texts attempt to envisage the evolution of governmental processes for multiple resource development within river valley regions without questioning existing jurisdictional problems. This creates a situation in which we cannot always compromise the two opposing factors and which prevents us from making suggestions untainted by political and jurisdictional preoccupations. Further, we cannot then treat the technical problems which we are forced to face in a truly scientific and objective manner.

Like all other human enterprises the development of river valley regions has as its principal and fundamental goal the well-being of the men who will be affected by it. Laws aim therefore at expressing the forms which will attain this well-being of men within the legal framework. But I believe that the research we are pursuing today in this Workshop session must not give first consideration to existing laws (even those of the BNA Act) but must strive to find the happiest and surest formulas so that we may obtain the fundamental objective of developing river valley regions for the well-being of man.

In sum, I am placing no value upon the jurisdictional variable, and intend to set it aside for the moment because it interferes with rational consideration of the problem. Jurisdiction aside, what factors should be considered in designing the most adequate forms of public administration and public management to achieve multiple resource development in river valley regions? I will consider three: the human factor, the technical factor and the economic factor.

#### 1. The human factor

Mr. MacNeill has rightly noted that the first criterion in evaluating government organization and ad-

ministration of water resources, underlined by Fox and Craine, is democracy. Fox and Craine suggest that every organization setting out to develop river valley regions must be so conceived that it closely involves the people who will profit from development and at the same time permits them to feel themselves a part of the organization. People are prone to forget that it is not a question only of obtaining *maximum* profits, but of obtaining *optimum* profits, that is to say, profits which take into consideration not only the economic aspect (perhaps not even at first the economic aspect) but which take into rigorous consideration the social and human aspect—the democratic aspect—of our enterprises.

If we truly want the people concerned to give their consent to projects for the management of river valley regions, if it is important that the people participate not only in the planning process itself but in its execution, I believe that it is necessary to bring them together at the very beginning. Concerning this subject the Conservation Authorities of Ontario seem to have certain authentic criteria which it would be good to retain and examine. These Conservation Authorities appear to recognize, at least in their general plans, very important basic criteria which Craine and Fox emphasize. At the same time they remind us that material riches will tend to become less important than cultural values—that is to say, values with which the human mind tends to associate the most important of our material values.

People will say perhaps that this is a question of education and information and that people can identify themselves with a project which is good in itself, placing little importance upon the way in which it is implemented. This argument however will not convince me, for I believe that some projects will not succeed in uniting public support unless interested people have sufficient opportunity to participate.

#### 2. Technical aspects

The technical aspects of river valley region development are obviously similar in all regions. However, each region has unique technical problems which cannot be solved by a standard formula. It seems therefore to be extremely important that each large river valley region, in its different phases of development, be able to rely on technicians who know intimately the present and future problems they face and who will be sufficiently stable and permanent to build special technical competence. If technicians are not trained for each principal river valley region as development proceeds, we are going to continue the vicious circle. We will be unable to resolve the problems within the regional plan because of a lack of competent technicians; at the same time we will be unable to recruit competent technicians

\*Translated from French.



because we do not have interesting and widespread local problems for them to study and solve. It appears more important in the long run to organize our management in such a way that we can develop competent people within local areas capable of solving the technical problems placed before them, than to solve certain of our technical problems immediately by means of concentrating our most competent technicians in a distant central organization.

My main point here is that we must have technicians on the spot who can resolve local problems. It goes without saying that I do not reject a much more vigorous and especially much more precise and more honest interchange of technical personnel than we have today. I believe that it is essential that regional technicians develop themselves and their techniques in a variety of locations and situations. I believe for example that it is absolutely essential that technicians who will be concerned with the rational management of a river valley region such as the Manicouagan River in Quebec be first of all a team

which will assume a permanent character. At the same time individual members should regularly be detached to participate in other projects in the Province of Quebec or in other parts of Canada or the United States.

We have today, I think, a deplorable tendency to assemble competent technicians in small "hothouse" cliques. In our era of conferences and conventions we are too prone to send high officials to meetings rather than to systematically send each of our engineers and economists to participate in practical works outside his own immediate milieu. Unless we take this step we will find ourselves for the most part with local technicians who do not really know how to profit from wider experience and contacts even if they attend many conventions and scientific meetings. I fail to understand why we must isolate ourselves in our own little corners. I believe on the contrary that every major river valley region project in Canada should provide opportunities for one or two of our technicians to participate.

## DISCUSSION

### *Assumptions*

The assumptions agreed upon by the group were regarded as important material for future consideration of this problem, and in themselves form guidelines to future action:

1. For the development of water and associated resources, the rational unit for management is the river basin, or some natural component thereof, although in some cases two or more basins may have to be managed together.

2. The optimum development of the region as a whole requires a co-ordinated approach to resource development, both within the region and between adjacent regions.

3. Within river basin regions there may be various combinations of resources available, and various stages of resource development, leading to different physical, economic and social problems which would influence the administrative arrangements required for management. It is recognized that urban development is a distinctive form of resource development.

4. River basin regions may encompass many forms of a variety of overlapping jurisdictions, municipal, provincial, federal and international, which would influence the administrative arrangements required for resource management.

5. Consideration of an administrative structure for any river basin presupposes complementary

administrative structures at higher and lower levels, and adequate policies and procedures for co-operation between them.

### *Summary of discussion*

The group agreed that, at the municipal-provincial level, the Ontario Conservation Authorities exemplified an effective type of structure which could be used as a model and adapted to conditions elsewhere. Manitoba has recently initiated a similar framework. Small watershed Authorities are not, however, a panacea and do not meet all the needs. Doubt was expressed that this form alone could solve problems of co-ordination between watersheds or within a larger basin. A provincial Authority or river basin agency would have to lay down broad guides for this purpose. Although the impact of metropolitan urban development on watershed multiple resource development plans was of great importance, the proposal that Conservation Authorities should for this reason undertake the broad land planning functions of urban areas was not acceptable without much further careful study of the implications of adding such a function to the existing gamut of responsibilities that Conservation Authorities have in Ontario.

A number of Workshop participants described examples of river valley projects and administration both in Canada and elsewhere. The structure of these appeared to take a variety of forms, but a common thread was the increasing tendency of all, no matter

how restricted their original purpose, to become concerned with multiple resource development and to develop into multiple resource agencies.

The Workshop gained the impression from this that theoretical consideration of large river basins in Canada would be unprofitable, since they were few in number and would in practicality have each to be treated in a special way. No general patterns could be laid down except that, very broadly, any organization should be based on the principles and guidelines of:

- (a) Democratic responsiveness as a built-in characteristic, except in unsettled regions;
- (b) All land and water responsibilities in one package;
- (c) Broad human and economic goals as well as specific objectives laid down from the beginning; and
- (d) Decentralization to the regional level in plan and in action.

The problems of staffing river valley agencies received considerable attention. The alternatives are to provide a corps of professionals and technicians at the provincial level, or to provide them at the agency level. Ontario among others, prefers the former approach, but there was some insistence that agencies themselves required a competent staff, and that a long-term approach to staff development should be undertaken. This would be assisted by a regular exchange program, whereby staff could enrich their competence through periods of work with other agencies in Canada or elsewhere. A national or interprovincial council could do much to promote and facilitate such an exchange program.

Financial arrangements were seen in two lights: as a key to success in provincially sponsored systems of Conservation Authorities, and as a problem requiring resolution at the interprovincial and international levels. In its field, the federal government could play a positive role without impinging on the proprietary rights and fields of responsibility of provinces. There was a suggestion that rather large sums of money could be made available through a National Resources Council.

Late in the session, the Workshop heard and noted the suggestion that a permanent, continuing body is needed to review and assess the whole package of federal assistance programs for their effect on comprehensive multiple resource development. If these programs are directed and administered by individual agencies and departments concerned with single resource fields and no over-all view is taken, the result may be the distortion of efforts made in in-

dividual regions to achieve an optimum and balanced development, solely because too much (or too little) financial aid is available in any one of the fields forming part of the whole regional program.

### *Conclusions and guidelines*

1. The existing framework of water administration in Canada, at all levels of government, and within and between levels, does not, in general, facilitate a comprehensive approach to the multi-purpose planning and development of natural resources.

2. Subject to the assumptions agreed to, the following principles are suggested in developing organizations to achieve resource developments in river basins:

- (a) The type of organization should:
  - (i) Facilitate a democratic choice of objectives or goals;
  - (ii) Make it possible to focus, in development decisions, all of the critical costs and benefits, external as well as internal;
  - (iii) Make possible the appraisal of proposed water developments in comparison with alternative means of achieving the same objectives;
  - (iv) Be capable of marshalling relevant modern technology from both the physical and social sciences.
- (b) Guidance should be taken from the fact that, generally speaking, the most effective organizations on this continent to date, even when federal or provincial in nature, have largely administered their programs from within the region concerned.
- (c) In river valleys with urban or urbanizing regions, special arrangements must be made to correlate the urban and resource planning programs.
- (d) The larger river basin regions will require some form of regional administration, with provision for federal and provincial participation, to prepare a comprehensive plan of resource development, oversee the implementation of the plan, and to periodically review and revise the plan.

3. A national, interprovincial body in the resources field, perhaps a Natural Resources Council, should be established with provision for federal and provincial finance and participation and a staff of its own. In the field of river valley multiple resource development, this Council would review proposed study programs for the development of comprehensive plans for the larger interprovincial basins, review the re-

sults of such studies when completed, and make recommendations on the desirable administrative, financial, and other arrangements necessary to implement and oversee implementation of the plan. The

Council could also review proposals for specific projects and make recommendations on the relative role of the provincial and federal governments in financing the project.



# BROAD ECONOMIC REGIONS

Thursday, October 26, 1961

"Unfortunately, much of the basic resource information is not organized on a comparable basis to population, production, income and expenditure information...but rather on an *ad hoc* basis related sometimes to 'natural' areas of control, sometimes to arbitrary delineations. It is not required that the natural resources be administered in accordance with this general statistical framework merely for the sake of uniformity. But at least, in surveying and controlling these resources, cognizance should be given to the general analytical requirement. There is no reason why a resource . . . area should not be so delineated that a reconciliation is possible between the specific 'natural' unit and the general statistical unit."

*N. L. Nicholson and Z. W. Sametz, Regions of Canada and the Regional Concept, "Resources for Tomorrow," Vol. 1, p. 376.*

# *Introduction*

Under the main subject, "Potentialities of the regional approach to resources use and development," Workshop A considered two main topics: "The regional basis of data collection and research" and, "The administrative organization necessary for comprehensive regional planning and development." This Workshop met as a group for the lead-off paper and discussants' remarks, and four general assumptions were presented as a basis for discussion. Workshop A then divided into three sub-groups to facilitate detailed discussion. Workshop B considered "The experience of the regional approach," after the presentation of the same four general assumptions considered in Workshop A.

The general conclusions of the Workshops were as follows. There is great undeveloped scope and great need for regional development programs in Canada.

A major impediment to such development is the fact that political boundaries do not usually conform to those of the "natural" resource regions, and that in consequence data collection and research is not usually capable of application to regional development planning. Regional development must be planned in the context of both the national circumstances and the local needs and aspirations—i.e., the sub-region, the planning region and the supra-region must be seen in their proper perspective. Co-operative planning, both interprovincial and between provincial and federal levels of government, was thought to be essential to a sound regional approach. Intensified research programs and information and education programs were essential components of regional development programs.

# *Broad Economic Regions Workshop A*

THURSDAY, October 26

Potentialities of the regional approach  
to resource use and development.

- Chairman: P. J. MURRAY, Deputy Minister, Newfoundland Department of Mines, Agriculture and Resources.
- Co-Chairman: ERNEST MERCIER, Deputy Minister, Quebec Department of Agriculture.
- Lead-Off Speaker: I. M. ROBINSON, Arthur D. Little Inc., California.
- Discussants: W. A. JENKINS, Associate Director, Extension Services, Department of Agriculture and Marketing, N.S. Agricultural College.  
H. VAN VLIET, Head, Department of Farm Management, University of Saskatchewan.
- Rapporteurs: P. J. SMITH, Assistant Professor, Department of Geography, University of Alberta.  
ANDRÉ MARIER, Economist, Quebec Department of Natural Resources.

## **Lead-Off Speaker (Mr. ROBINSON)**

To begin a talk before this group with the statement that resources should be considered from a regional standpoint is to state the obvious—yet, I think it is well to remind ourselves of this need. Resources development has resulted in regional development throughout the history of Canada, and today, we see the same process going on: in the creation of the Quebec-Labrador iron ore complex stretching north from Sept-Iles to Ungava Bay; in the discovery and development of the large Pembina oilfield in northwest Alberta; in the exploitation of minerals in the area around Great Slave Lake; in the continued settlement of the agricultural portion of the Peace River region; in the creation of a power-aluminum complex centered around Kitimat in northwest British Columbia; and in many other areas of Canada which have experienced resource development since World War II.

In this process, resource development—together with the closely related phenomena of interregional and international trade, the growth of manufacturing, and the expansion of cities and towns—have created Canada's *regional pattern*. This pattern can be best visualized as a hierarchy of regions. At the lower end of the hierarchy are those regions in which

interaction of economic, social and political activities have been most intense, creating something resembling a functioning organism. These are what are referred to as the urban-centered—or city-centered—regions. The Prairie service-center regions epitomize this type.

At the upper end of the hierarchy are the very large areas, sharing a common physical base, producing characteristic development and problems, such as the Canadian Shield or the Black Soil Zone.

In between these extremes lie various other types of regions, varying in size and in intensity of economic and social activity.

When regions are viewed in this way, they not only provide the basis for insight into the use and development of resources, but also serve as the framework within which effective solutions may be sought.

Our Workshop today is concerned with one of these regional *types*—one near the top of the hierarchy—the *broad economic region*. We are confining our discussion of this regional type to include only those broad economic regions which involve two or more provincial jurisdictions—that is, regions which fall partly in one province and partly in another—for example, the Peace River Region; the Clay Belt (N.E. Ontario and N.W. Quebec); Quebec-Labrador; the



Gaspé; the Aurora region (N.W. Ontario and N.E. Manitoba); and the region formed by the northern fringes of the Prairie Provinces and the Northwest Territories (e.g. Lake Athabasca area). These are some of the more obvious examples.

We also include in this category of broad economic regions, those regions which, for certain purposes, may comprise several whole provinces—e.g. the Atlantic community and the prairie grasslands region.

These regions pose special problems or provide unique opportunities for research, planning, and development, which can best be visualized, described, and met on an areal basis. The need in such cases is to develop policies, programs, and actions to move the area from where it is at present toward certain predetermined economic objectives.

They may be *economic problem areas*, such as the Atlantic Provinces, which have become excessively dependent on the production of a limited number of basic commodities and whose growth requires the development of other resources in the region. Other areas may pose *special planning problems* due to the poverty of their populations, their limited natural resources, or their isolation; for example, most of the Yukon and Northwest Territories. Then, there are still others that may be termed *economic opportunity areas*, such as the Peace River Region, with a variety of natural resources whose potentialities would be realized by an improvement in transportation facilities, or the development of a potential hydroelectric power site, or the establishment of some form of comprehensive planning under certain new administration arrangements and procedures.

When these problems as well as potentialities are examined, it becomes clear that they are usually related to the area's physical characteristics. Areas with special problems are usually characterized by rugged topography, or harsh climate, or lack of water, or some other physical disadvantage, or combination of adverse factors, which obstruct development, and whose solution will necessitate overcoming the physical handicap (or handicaps). Similarly, those regions with potentialities for further growth are generally located in areas where the soils, climate, terrain and vegetation are conducive to population settlement and agricultural and/or forestry production, or where the geological bedrock is conducive to mineral occurrences, or where the river flow is adequate for developing hydroelectric power, or where some other favorable physical condition (or combination of such factors) is present.

Having common problems and/or similar opportunities for development, it would be most valuable if these regions could be co-operatively planned and developed. By treating the broad economic region as a whole, it would be possible to conduct research

into the basic conditions and problems of the area, and to

1. Assess the specific resource and industrial development potentials of the area;
2. Estimate the types and amounts of capital required in the various fields to start or accelerate economic development of resources, and to investigate the possible sources of the necessary capital;
3. Examine the conditions required to stimulate development, e.g. the living and working conditions and social and cultural opportunities of the various communities;
4. Help the parties concerned (public and private) to assess their roles in relation to the needs of the broad economic region, and of the sub-regional complexes emerging as a result of the location of resources and related facilities and communities;
5. Set up the patterns of sub-regional organizations for the realization of resource potentials.

It should also be possible to deal with resource problems and aid the development of resources by means of

- (a) Technical services and advice;
- (b) Works, financed by public capital;
- (c) Lending of capital for private development;
- (d) Bringing the investment opportunities of the region as a whole to the attention of private investors throughout the world.

Scattered throughout the Background Papers are examples of experiences which point up some of these benefits. Your excerpts note these, and thus, I will not repeat them.

#### *Administrative framework*

The need for, and the values to be derived from an over-all approach to resources use and development in our broad economic regions is, I believe, quite clear in view of my previous remarks. But to give practical expression to this concept, it is necessary to develop an administrative framework which will permit the handling of the many complex tasks that such an approach involves. This is probably the 64 dollar question. We may all agree with the need and benefits which would accrue from a co-ordinated approach, but when we start to "talk turkey," as it were, we generally start to have misgivings, or throw up all sorts of counter-arguments. But, unless we seriously give thought to this problem, all our talk will be to no avail. I am one of those who believe, however, that when there is a will there is a way. There is no "magic" formula in this regard, and I will not pretend to give you any here today. There are various possible administrative forms that might

be applicable—ranging from informal committees representing government, business, and industry within the boundaries of the entire development region, to the formation of special development authorities (e.g. T.V.A.), with power to prepare and carry out a program of development. The value of these different administrative forms will vary with the various regions, depending on such factors as history of development, nature of the development problem, extent of development to date, geography, etc.

One thing is clear to me, however: Both the provincial and federal governments have a responsibility to co-operate in planning for the realization of development opportunities within broad economic regions and within the framework of national development policies. Both provincial and federal policies and actions affect the role and manner of regional development. The provinces affect development of the broad economic regions, first, in terms of resource management, through statutes regulating land use and conserving water, soil, forests, wildlife, gas and other resources; through technical assistance to rural and urban areas to deal with certain kinds of land use problems; and through interprovincial forms of co-operation on a regional basis.

Secondly, in terms of finances, through financial and technical aid to new towns, and to municipalities and school authorities; and through the impact of their tax policies.

Thirdly, in terms of direct development, through the promotion and guidance of industrial growth; by granting, leasing or selling mineral, power and forest rights; by constructing roads, hospitals, housing and other public works; and by providing capital loan funds for private industry.

Federal policies and actions affect regional development in various ways: First, in a direct development sense, by underwriting mortgages and providing loan funds for housing, by constructing (or financing) highways, airports, harbors, post offices and other public works; by providing assistance to veterans to settle on the land; by providing capital funds for industrial development; and by actions designed to meet the resource problems of the broad regions which overlap provincial boundaries.

The federal impact on regional development is felt, secondly, in terms of finances, through the regulation of freight rates, through federal-provincial financial agreements, and through the impact of federal tax policies and monetary measures.

Thirdly, the federal government affects regional development by influencing or determining certain matters of international significance, such as the interprovincial and international marketing of gas and oil; immigration and settlement policy; the tariff

structure; the identification of and relationships with foreign markets and the terms of trade with other countries.

Both provincial and federal governments influence regional development, in an indirect way, by compiling, analyzing and publishing statutes and other relevant data which throw light on the character of provincial and national economies, and which also influence local decisions, policies and programs.

In view of the above, it is clear that regional development may be influenced by an amalgam of complementary, overlapping and possibly conflicting provincial and federal policies, programs and actions. In the federal Canadian state with its inherent division of responsibility, the best use of our resources, from a long-term national point of view, calls for a concert of policies and decision-making at all levels.

#### *The region within a provincial and national framework*

While the regional framework is an essential basis for discerning and dealing with the problems and potentials of resource development, it is not, in itself, adequate. Just as the consideration of resources from a national point of view leads downwards to the region, the consideration of resources within the region leads up to the province and the nation. What this means is simply this: It is essential to prepare separate regional development programs, each with an internally consistent, feasible, and viable set of proposals fitted to the needs and resources of the different regions. At the same time, from the viewpoint of the whole, the sum of the regional development patterns must be consistent with the expected growth of the population and the economy of the individual provinces, including the financial capability of the governments and, indeed, of the nation as a whole.

The pitfall of most concepts connected with regional economic development is the failure to harmonize the regional concept with its corresponding provincial and national concept. This gives rise not only to unsatisfactory theories, but also to intense rivalries among the regions and provinces and to inconsistent promotional activities. The result is akin to what Odum and others have characterized as "sectionalism," and is not to be confused with a regionalism which recognizes that the region is simply a part of a larger organic whole.

It would appear that the failure to define and characterize regional economic concepts in their suitable provincial and national frameworks mainly reflects the fact that, at least until recently, we have not had the analytical tools with which to do this job with both precision and comprehensiveness. We have known only roughly how regional economic



development contributes to provincial and national development, and we have known only roughly the economic relationships which exist among regions. To be sure, in specific lines we have known much about these things. Thus, for example, we know that the full development of the power potential in a certain river valley will add so many kilowatts of capacity to be available within certain power distribution areas. We know also the amounts and kinds of materials and labor necessary to produce the additional power facilities, and we may be able to gauge quite accurately where supplies of labor and material will come from. However, what we have lacked is a technique for tracing the effect of the additional power capacity upon the total regional economy and upon the total national economy in terms of the immense variety of economic activities that take place in both the region and the nation.

Recent refinements of techniques promise to give us a tool or tools which can be used to overcome this difficulty, as do further experimenting with these approaches. To mention but a few: input-output analysis, linear programming, regional balance payments, gross regional product, benefit-cost analysis.

#### *Regional development programs*

The need, then, is to prepare regional development programs for various regions which aim to overcome problems, realize potentialities, and harmonize with programs of other regions. In certain lines such as electric power development, the program can be scheduled in some detail. In other lines, such as private manufacturing and agriculture, the program can set forth goals, but should rely mainly on private initiative and action for accomplishment. Wherever possible, strategic points—if you like, economic pressure points—should be sought by means of which large program objectives can be achieved by the exertion of a slight pressure, thus obviating the need for massive administrative activities. Regional development programs can profitably make use of the several analytical tools mentioned earlier, and others as well. The program should also be directed to the achievement of objectives, stated as specifically and quantitatively as possible, and should be applied to appropriately defined regions. (A concept of economic “balance” or “balanced growth” will be unavoidable. It is suggested that such a concept be worked out in terms of economic growth and economic stability as a composite.) The give and take among regions has to be taken fully into account to the end that the interrelated parts make their fullest contribution to the development of the whole organism—the nation, and perhaps indeed to the world.

Finally, effective programs, along the line indicated above, depend on the creation of a regional

outlook: a regional “consciousness,” developed through a program of public information and education.

Several Background Papers, especially those by D. F. Symington and Baker and Solomon, have referred to this need.

D. F. Symington, on the objectives of a practical information and education program with respect to our renewable resources states:

“The objectives of a practical information and education program include development in the public of a critical awareness of the factors of resource management that impinge on the welfare of the community, the nation and the resources themselves. Community leaders especially should be aware of the criteria on which to base wise decisions on resource use. Understanding of the recreational and aesthetic values of resources is of paramount importance.”

Baker and Solomon, on the role of education through extension in comprehensive resource development, state:

“In the context of comprehensive resource management and development, research and policy are intimately related but separate functions. Both, however, must be integrated into a program of education through extension. As Schickele has observed, ‘public policies are designed to improve the conditions under which people work and live. The goals of policies are governed by what people desire, and the measure of policies, by what people think the government can and ought to do to bring about the desired changes.’ An explicit assumption running throughout this paper is that the primary purpose of education through extension is one of making people as persons more effective partners in both the formulation and implementation of public policies. What we have been concerned with assessing are those conditions that must be taken into account if this is to occur.”

In conclusion, I should like to cite some remarkably apt comments by David Lilienthal, who was the first Chairman of the Tennessee Valley Authority:

“A fundamental change in resource development then must begin at the beginning, in the minds of men, in the way men think and, so thinking, act . . . . The unified development of resources must become the common purpose, as nearly as possible, of all the people and all the agencies of the entire valley.

“This is a people’s job. All the human forces and energies of the valley are essential to it. And what is true of our region is, I deeply believe, equally true of regions and people everywhere. It is just



as important that a farmer upon his uplands should see this unity, as that the T.V.A.'s agricultural experts should see it. The job cannot be done unless the individual farmer, standing at ease with nature, as Whitman said, sees his farm, his community—the little watershed—and the larger region all as parts of a single whole. It is quite as essential that the businessman in this valley should envision the river and the farms and the minerals and forests in their entirety as that they should so appear to the engineering forces of T.V.A. For a program of resource development is effective only when it is in the hands and minds of the people."

#### Discussant (Mr. JENKINS)

This Workshop is charged with considering the potentialities of the regional approach to resource use and development. This is a subject which is of extreme interest to the people in the Atlantic Region. When one considers that the personal per capita income in this region is less than 70 per cent that of the Canadian average, one can understand our interest and concern in regional studies. I do not wish to sound provincial or parochial in this matter and what I want to say is in the national interest. I am merely using the Atlantic Region as a case study. In other words, I repeat Dr. Robinson in his paper on the Peace River region, "Growth objectives and goals will not be realized automatically. Development must be planned and co-ordinated."

The proposition is set forth in several of the papers and I think it should be made again; indeed it is the only point of this entire paper that, in the national interest, the federal government should take the responsibility and the initiative for the development of the various regions within the country. I submit that this has not been the case in the past and that the national policy of Canada, while providing for the development of the protected industrial centers has made a framework of decline for the exporting primary industries of the Atlantic Region. What is needed now is a resolute, progressive and positive policy at the national level to at least study the causes of the disparities in income among the different regions and then take definite steps to eliminate some of them. Professor A. K. Cairncross has already made a study of this particular problem and his recommendations are included in the paper by Mr. A. C. Parks.

From time to time the Maritime Provinces and perhaps other regions have been challenged by the federal government to come up with a plan that will lift the area by its boot-straps. To attempt to meet these challenges and make specific suggestions within the present framework of administration would in my opinion be to a considerable degree a

waste of time. Until the federal government itself embarks upon a positive policy of regional development there is little point in any region offering any suggestions.

D. W. Slater, in his paper, points out that there is some decentralization of industry to the Prairies but not to the Atlantic Region. He goes on to say that the fundamental difference between these two regions is the fact that the Prairies have had a tremendous development because of the new resource base of oil and gas. Thus, it would seem to me that if, on a national basis, we are interested in the development of the Atlantic Region we need two kinds of programs:

- (a) An expansion of the export trade for the natural products of the region.
- (b) Special measures to reduce high costs imposed upon our industries by the Canadian economy.

This may appear to be a paradox in that we require the application of two sets of policies which, traditionally, have been opposed to each other, i.e. the free trade pattern of ideas and the complex subsidies associated with high tariffs. There is some truth in this paradox however, and the fact is, that every country including Canada uses both sets of policies flexibly and in combination with each other, according to the particular situation of the moment. The essential problem of the Maritime Region then, is how to open foreign markets for the primary and natural products of the area, and at the same time, offset the invisible drain of high production costs within the Canadian economy. The answers to both these questions can be given by many people within the Maritime Region, but first we need a national policy of regional economic development before we can get to first base on a regional approach.

It is fully realized that high productivity is essential to recovery and stability of every industry. This is an elementary economic law and one I am sure we all understand; we should not suggest otherwise or lay undue stress on artificial means of support. Yet, productivity alone is not the key to prosperity. The key today is net profit after all expenses and allowances are taken from gross returns. When the Atlantic farmer, or fisherman, or corporate producer sends some of the best seed potatoes in the world or first-class fish or other product to the United States for example, his gross return is cut by a considerable percentage because of the import tariff.

His costs of production, which include his cost of living and labor, are pushed up by the tariff structures arising from national policy, and transportation factors which affect the prices of goods which come from Central Canada. No one knows

exactly how much the Atlantic producers' costs are pushed up in this way. Everyone knows they are much greater than if he bought on the British or American markets.

Thus, the margin of profit for the Atlantic producer is reduced tremendously. Sometimes it turns into a loss. No one has calculated or recalculated these factors with modern statistical techniques and refinements to know precisely what it costs the Atlantic producer to belong to the Canadian economy.

### *Agricultural development*

It has been said, time and time again, that the most active program to affect land use in the Prairie Provinces has been the P.F.R.A. Certainly the Atlantic Region requires desperately something of this nature. We have had a small counterpart of the P.F.R.A. in the M.M.R.A. which did some splendid work while it was in existence. What is required now is, instead of terminating this agency, to expand it on a wider front and have it engage more actively in the development of the agricultural resource in the region.

I think that one could argue that it would be in the national interest for the Atlantic Region to supply its own demands with red meats. Thus, whether it was decided to subsidize freight rates or to build large feed storages and supply the maritime region with grain by water route is a mere detail. What I am trying to say is that the national government should adopt this as a principle and take positive steps to bring it about.

There is a thread running throughout many of the papers that an additional level of government will be required for regional development. In Dr. Robinson's paper the implication is that this would be not only slow and cumbersome, but expensive. I do not believe that any of these things should discourage our work in finding new frontiers of government for this purpose. We have found cures and preventions for dread diseases; we have sent men into outer space; it seems only plausible to me that given the opportunity, our students of public administration or political science can find new frontiers of government to handle regional and national development programs. Who knows; this may require a new department of government. Perhaps a Cabinet committee might do the job. Further consideration of this is, of course, beyond the purview of the Workshop.

Another serious problem is brought out by Professor Alexander Leighton of Cornell University. He states that mental disorders are a function of the disparity of income within different regions. His research has proven this principle within various

communities and I would suggest that the principle would hold firm when expanded to compare various regions within the country.

I think we can all agree that there are no major differences in the mental composition of people across the country, and I think we would not disagree with the statement that people are poor not because of the lack of resources, but because of human arrangements. Thus, I would submit that the disparity of income between the Maritimes and the rest of Canada is due to man-made legislation and not due to any inherent human factors. However, if this disparity continues for very long, it may have some very serious implications in the unborn generation to which reference has been made throughout this Conference.

All of this may sound somewhat chauvinistic or parochial to some, but I submit this argument to underline the need of a resolute national policy for development on both a national and regional basis.

### *Consideration of assumptions*

The meeting at this point heard the following four general assumptions:

1. A broad economic region can be defined in general, as any large area which has a community of economic interest. This Workshop, however, will focus only on those broad economic regions which involve interprovincial and/or provincial-federal relationships.
2. Resource and general economic development opportunities are not uniform (a) between the regions, or (b) within the regions themselves.
3. The formulation and implementation of policies for the development of the nation's resources require that explicit recognition and attention be given to the regional aspects of such development, as well as to provincial interests and responsibilities.
4. Both the provincial and federal governments have a responsibility to co-operate in planning for the realization of development opportunities within broad economic regions and within the framework of national development policies.

The following material represents a consolidated report of discussions of the three sub-groups of Workshop A.

### *Data collection and research*

It was agreed at the outset that research is absolutely indispensable if economies and administrative efficiency in regional development are to be obtained, but such a statement leaves a great many questions



unanswered. Among the questions submitted for consideration were:

1. What kind of data collection and research is necessary?
2. Who should be responsible for the data collection and research?
3. How can regional organization of data collection and research be instituted?

It was then emphasized by several speakers that a tremendous amount of data collection and research pertinent to resource development is already being undertaken. Undoubtedly, there are still major gaps in this field but the major needs at present are:

1. The rationalization and standardization of the techniques of data collection and analysis, and particularly of the areal bases for this work;
2. The collation and co-ordination, on a uniform basis, of the work that has already been and is now being done.

It was suggested that the first step should be to approach all the agencies presently engaged in resource research (universities, government departments, research councils, crown corporations, industries, etc.) to obtain their support in a program of standardization and collation.

The group heard a very detailed description of work the Dominion Bureau of Statistics is already doing in regionally-based collection of statistical and other basic data. The D.B.S. collects data on the basis of the smallest units of local government, and since the second World War has also been providing data for larger units—combinations of local governments which are regarded as economic regions. It is possible that this collation could be expanded even further to match the concept of "broad economic regions."

At present, regional data is not provided for all provinces. This is not because the data does not exist; rather it reflects the fact that the provinces have not requested regional information.

One limitation to the D.B.S. approach is that this agency is not responsible for the collection of much data specifically related to resource development, since this is largely a provincial responsibility. It was felt by the group that provincial data collection should be correlated with the D.B.S. units in order to give a comparable basis to all the data.

At this point in the discussion, Workshop A adopted the following recommendation:

In order to undertake the required research on the problems and potentialities of broad economic regions, there is need for data on the demographic, socio-economic, and resource structure of these areas, related to the framework of decision and

activity. At present, the information collected and published by federal and provincial governments is not organized on a comparable basis. It is recommended, therefore, that data collected by all agencies should be on a uniform basis within a standard framework adaptable to the concept of the economic region.

#### *Administrative organization*

It was agreed that discussion should focus on the form of the interprovincial and federal-provincial organization needed to handle joint resource problems. As a starting point, a number of existing organizations were described.

1. Atlantic Provinces Economic Council—a group designed to study broad economic problems and to promote industrial development, but only in an advisory capacity. The Council is supported by government contributions though most of its members are business representatives.
2. Ontario Development Associations—ten economic regions based on the D.B.S. definition. These are, therefore, groupings of municipalities formed to consider, again in an advisory capacity, common problems of industrialization, resource use and development, education, etc. There is also a Provincial Council, with representatives from all of the Regional Councils, to consider interregional and province-wide implications. The operation is financed by the member municipalities with matching grants from the provincial government.
3. Prairie Farm Rehabilitation Administration and Maritime Marshlands Rehabilitation Administration—both are service organizations rather than administrative units, i.e. both implement policies that are determined and financed by the established governments.

At this point, it was agreed that, ideally, a regional organization should have broader powers than any group yet in existence. It was felt that for regional organization to be effective it should have authority to do research, prepare and implement plans and even to raise taxes: in short, to introduce a new level of government. At present, of course, such a proposal is unconstitutional. The nearest approach that can be made to this is a more comprehensive co-operation between federal and provincial governments, i.e. comprehensive in terms of area involved and resource activities included.

The group then adopted the following resolution: It is recommended that specific compacts be entered into between and among provincial governments and between federal and provincial gov-



ernments to establish, finance and operate broad economic regional organizations. As an absolute minimum, these organizations should be responsible for data compilation, research and planning but, wherever possible, their functions should be extended to the development and financing of the best use of the renewable resources of these regions.

The final phase of discussion was concerned with the responsibility for initiating regional organization.

There was general feeling that regional units should be built up from local government units, but opinions were divided on the worth of local initiative. On the one hand, it was pointed out that the municipalities have to work within a framework of policies determined at the federal and provincial levels; on the other hand, it was believed that the Ontario experience showed that local groups can bring important matters to the attention of the higher governments.

Mention was then made of examples of co-operation initiated by both provincial and federal governments. Reference was made to oil and gas conservation, for which there is an interprovincial advisory group which also brings in authorities from other government departments, e.g. Agriculture. An example of a federally initiated co-operative program is the Trans-Canada Highway agreement. It was stressed that the federal government has (and should have) many broad policies and plans in which the provinces may participate, e.g. irrigation projects under P.F.R.A. The principal criticism of these policies was their lack of co-ordination.

It was concluded, therefore, that the federal government already has the greater role in broad resource development policies. Although this is probably sound there is also a great need for more interprovincial co-ordination where jointly administered resources are involved. The federal government must act in co-operation with groups of provinces rather than with single governments on a piecemeal basis.

It was pointed out that a fine example of co-operation had already been established in the Steering Committee for the present Conference, and that this should be the basis for future co-ordination of resource use and development. It was suggested that the Steering Committee should be given the power to add to its membership, to increase the resource representation, and to employ a permanent Secretariat. Provincial needs and requirements could then be brought to the attention of the Committee, over-all plans could be developed by the Committee and the proposals taken back to the provincial governments for their consideration and implementation.

The group then adopted the following resolution: It is recommended that the Steering Committee approach the federal government to take the initiative in setting up the federal-provincial machinery for formulating a national policy for the development of renewable resources through broad economic regions.

Further points on investment and information-education were made as follows:

#### *Investment (Workshop A2)*

After an intensive discussion of various private and public capital investment questions, it was agreed that:

Regional development is a new additional method of developing economically the underdeveloped, as well as the better developed regions of the country, by providing a better base of knowledge and co-ordination for more rational decision by private and public investment bodies with respect to the use of resources.

1. It will help to determine aggregate capital requirements, and the rate of optimum input, for the development of the resources of the regions.
2. It will help to co-ordinate the provision of social overhead capital by federal, provincial and municipal levels.
3. It will facilitate examining the conditions for attracting capital into particular underdeveloped regions.
4. It will help to raise the necessary capital by
  - (a) Assisting rational decisions by private investors looking for investment outlets, with respect to the location of industrial development opportunities;
  - (b) Facilitating cost-benefit analysis for public investment decisions;
  - (c) Providing a better long-term basis for decision on equalization payments after full potentials are known or realized.
5. It will help the Industrial Development Bank in its decisions with respect to the provision of capital funds for private development.

#### *Information and education (Workshop A2)*

It was felt that this aspect was very important at the regional level because, being close to the grass roots, there were opportunities as well as obligations with respect to communication with the public. It was suggested that:

1. Provision be made for wide participation in policy formation as well as dissemination of policy results, by means of

- (a) Public meetings in the formative stages where regional problems would be defined;
  - (b) Opportunities for public discussion of research findings;
  - (c) Public hearings on action programs;
  - (d) It might also provide opportunities for regional dissemination of related federal and provincial programs and projects. In essence, the regional agency would help the people of the region to analyze their own problems and to come to conclusions on the worth of individual co-operation with regional programs.
2. The regional body should gather and catalogue all the available information on the region, and issue a regional bibliography.

3. Provision should be made for organized data flow to regional planning boards from federal and provincial sources, as well as the feedback flows.

4. The regional bodies should facilitate the exchange of information, and even co-operation through exchange of personnel, between regions which have common problems or overlapping interests, e.g., tourism.

5. Great emphasis was placed on technical services to the individuals of the region. Such regional agencies will assist in the co-ordination of technical services and advice. For example, the agricultural representatives, being informed of the total regional plan, will be able to give more specific and more rational long-term advice to the people whom they serve.





# *Broad Economic Regions Workshop B*

THURSDAY, October 26

The experience of the regional approach.

- Chairman: HARTWELL DALEY, Director of Research, Prince Edward Island Department of Industry and Natural Resources.
- Co-Chairman: A. T. DAVIDSON, Chief, Resources Division, Canada Department of Northern Affairs and Natural Resources.
- Lead-Off Speaker: NOEL DANT, Town & Rural Planning, Alberta Department of Municipal Affairs.
- Discussants: R. GUSHUE, President, Memorial University of Newfoundland.  
ARTHUR C. PARKS, Atlantic Provinces Economic Council.
- Rapporteurs: F. GRENIER, Professor of Economic Geography, Laval University.  
D. KIRK, Secretary, The Canadian Federation of Agriculture.

## **Lead-Off Speaker (Mr. DANT)**

So long as there are natural resources to be plundered man seems bent on regarding these resources as the proper object for prodigal waste. Nature's bounty is not a banquet to be gorged but a vast storehouse in which man must replace the substantial equivalent of all that he takes out. This lesson has been shown us right down through the ages. From Pharoah's time when the Jews were released from bondage, plagues, famine, floods and other manifestations of the destructive force of nature repeatedly crop up through history, if nature is abused.

There is a widespread tendency for man to make wanton use of resources, sacrificing future prosperity for immediate gain. Each country and each region of a country requires a separate combination of physical, technical and social recourse, in order to bring about basic improvement in its plane of living. In many densely populated regions, the immediate objective is to provide some security against recurring catastrophes of nature; in others an eagerly sought increase in economic opportunity; in others to perfect programs to reduce destruction due to erosion of soil, flood and drought, and to improve productivity of land.

All of this may involve changes in the application of modern technology, systems of land ownership, programs of local education, the structure of government by which economic and political power are distributed at local levels. Technology is insignificant unless supported by social change.

The intention of any remarks I may make this morning is to try to keep to the exact text of the topic of this Workshop and to minimize as far as possible overlapping of the subject matter of other workshops on regional development.

I think the first thing we have to do is to try to differentiate the kind of region we are dealing with today from other types of regions; particularly the city-centered region, which is better known and to which the discipline of so-called 'regional planning' is usually linked. In fact, the term 'regional planning' is vastly misused. The word 'region' could comprise an area as small as the urban region of the sociologist—a part of a city—or as vast as is used by the "Technical Assistance Branch" of the United Nations in describing Southeast Asia as a region.

There are, in fact, as many kinds of regional planning as there are kinds of regions. If the city-centered region is sometimes labelled the urban region or the sub-region, then the broad economic region can similarly be labelled the supra-region, i.e. a region larger or at least exceeding the administration of a single province.

Under democratic government, the continuous exercise of power must remain in the hands of the representatives of quite small units, and any planning organization must work within those limits. The difficulties of broad planning are those of authority and scale, the problem of the equation of the changeable national economic picture with the reality of brick and mortar at the local level.

For the land use planner, the region is an area with certain unitary characteristics, compact enough for satisfactory administration (whether statutory or advisory) yet large enough for its planned development to be balanced and carried out on a scale commensurate with modern day technical possibilities.

The unitary characteristics might be geographic, economic, social, political or even historical, or all of them. Their influence might be as a boundary distinguishing one similar region from another, or as a sphere of influence emanating from some powerful integrating source. The Prairie Provinces and the Maritime Provinces come within the context of this definition.

Settlement, route and area are the three facets of the geographical interpretation of the economy of this kind of region. The commercial output of the region calls into being centers of population differing in their interests and in their industries. The quantity of output that passes through such commercial channels is the sum total of the economic, political and cultural intercourse of the region. It is, in fact, a measure of the nodality of each populated center in the region and provides us with a basis for estimating growth trends in each center and in the region. This is the fundamental basis on which any sound regional plan can be predicated.

Real regional planning at our level must be considered not as the application of a single discipline, but as an amalgam of various disciplines including town planning *per se*, economics, sociology, land ecology, agronomics, geology, pedology, mineralogy, hydraulics, forest conservation, micro-climatology, etc.

Many theoretical regional planning schemes have been prepared up to now. Those actually implemented or in the course of implementation are relatively few. Thus the experience of the regional approach is unfortunately weighted in favor of the theoretical, rather than the actual.

Examples of this level of region include the Nile Valley, both in the Egyptian and Roman eras, the Tigris-Euphrates area in Babylonian times, and some examples from the Roman colonial days which embraced several countries. These were followed much later by examples from East Europe and Asia at the time of Genghis Khan, and later, Tamerlane. More recently, since the turn of the century, we have seen the development of the T.V.A. and a certain amount of similar work in the Columbia Northwest region in the United States, the Ural Mountains area and the Ukraine in the U.S.S.R., upper Silesia, Italy, France, Norway, the Netherlands, India, Puerto Rico, the Zambesi River area in Southern Rhodesia and several smaller scale examples from the British Isles. I

should mention in this regard the P.F.R.A. and the Atlantic Provinces Economic Council.

Canada has probably done less than any other modern industrial nation to adopt measures aimed at improving the lot of chronically distressed areas.

In the U.S.A., the work of the T.V.A. is too well known to be described here. It has rehabilitated a depressed area embracing parts of five states and which used to be extensively eroded, flooded and devastated. In a recent trip through Asia, it was found that more interest was exhibited in the T.V.A. scheme than in any other development in the U.S.A. So far as the Northwest Columbia region is concerned, the large amount of good preparatory work done before World War II was halted owing to the war.

In the U.S.S.R. I doubt whether the Russians could have withstood the major onslaught by the Nazis had it not been for the huge Ural Mountain area plan; the building of the new industrial cities of Magnitogorsk, Sverdlovsk, Molotov, Chelyabinsk and Ufa, and damming the rivers Ufa, Belaya and Kama, to provide hydro-energy and a last line of immense industrial potential after the western plains of Russia had fallen to the enemy.

Russian regional planning is based on a co-ordinated national socio-economic and cultural program with detailed objectives, such as mentioned above. It was carried on on two different planes; the planning of economic and social life known as *planirsovaniia* and, secondly, physical or land planning, known as *planiovka*.

The progress from local toward regional planning in Britain was accomplished by painful experimentation, leading to evolving legislation starting in 1909 right up to the current vehicle known as the Town and Country Planning Act of 1947.

In 1953, Mr. Macmillan stated that "Planning, in its broad sense (i.e. regional) has come to stay, to preserve good agricultural land, to encourage the development we want in the proper places, to secure the exploitation of valuable mineral deposits, to restrain the inter-war sprawl of the growing cities and to preserve the countryside."

Italy has retained a form of regional government ever since the formation of the first Italian kingdom in 1870. There were earlier attempts at regional planning in backward or marginal areas. Asia and Africa are not the only areas where such marginal regions exist. Greece, Spain, the Balkans, and parts of central France and Italy all suffer from severe cases of undeveloped area—"Les Régions Déshéritées," as the French call them.

Originally designed to rehabilitate Italian soldiers after the first World War as farmers, on land reallocated from the vast neglected estates of absentee

landowners, such schemes involved water supply, drainage, rural electricity and new regional highways. Financed by a special fund sponsored by Mussolini's government, the planners were nevertheless bedevilled by the conflict between Church and Party. However, for all the shortcomings of these plans in the Pontine Marshes and Southern Italy and Sicily, they illustrate an endeavor on a proper scale to improve the livelihood of hundreds of thousands of people.

The three northern provinces of Norway are a big step from the Mediterranean, yet, like Southern Italy, these remote places in the arctic regions have long been a problem. The destruction by the retreating Nazis in 1944 brought the whole matter to a head.

Regional planning on an economic base was established in that country in 1949, when a Council of Regional Planning was set up under the Ministry of Labour. Representing a third of the country's area, with only 13 per cent of the total population and only coming up to one half the national average in economic production, the area suffered under the 'scorched earth' policy of the retreating Germans. An area equal to Holland and Belgium together was systematically razed and 40,000 people forcibly evacuated. The Norwegian Government tackled this problem area by means of a comprehensive economic development plan. Today, it is a multi-purpose project with an engineering basis that seems to attract the imagination more than most other types of schemes of a regional nature. It seems to be acting on what I consider the only approach, that is, the comprehensive approach.

From France and Holland come projects of gigantic engineering proportions, whose fulfillment is only possible by their being tackled on a comprehensive basis. The Monnet plan, covering all and more of the vast Rhône watershed basin, is carrying on efforts started since as long ago as 1901, in the face of political and administrative opposition. At present 20 major electrical energy installations are being designed, and 11 of these, in the lower region, will generate as much power as the whole 26 installations of the T.V.A.

Outside of electrical energy, the plan involves extensive canal and irrigation works capable of increasing French agricultural output by as much as 5 per cent. New harbor installations, locks and water barrages, and fish ladders are designed to break the natural force of the river's flow and make upstream navigation possible. The ecologic planning of rural and urban settlements, in relation to the total project, is very backward. Therein lies the danger of a unilateral approach, from the engineering point of view alone, as against the comprehensive viewpoint. Very little thought was given to the

permanent settlement of those employed in the engineering development works, resulting in poor human settlement planning.

Earlier planning legislation in Holland took on new life around 1932. A new Act was prepared in which planning powers were separated at all three levels of government; local, regional and national. One of the most imaginative results of this Act was the reclamation of the Zuider Zee. Started in 1891, the scheme, after a slow start, received new impulse from the 1932 Act and is now rapidly drawing to completion. The Northeast Polder is an example of what good regional planning can do. Contributing towards this plan and in this area, one sees the inter-related work of the hydrologist, the engineer, the agrologist, the sociologist, the architect and the regional planner.

In Canada, the government has, through the P.F.R.A. taken an active part in developing the water resources of a region, primarily for agricultural purposes. Its activities in this connection were stimulated by the problems of drought and economic depression in the 1930's. The activities of the P.F.R.A. have been focused on agricultural readjustment. In their Background Paper, Kristjanson and Sewell say—

Over the years, there has been an increased demand for domestic and individual water supply, as well as large scale recreational opportunities. In many cases, the P.F.R.A. dams have been constructed to provide these services basically in conjunction with an agricultural purpose. The justification for federal financial participation up to now has been based on the need to improve agricultural opportunities.

The activities of the A.P.E.C., so far, appear to be mainly collecting and distributing information and data.

Each of these examples of broad regional planning provides lessons, administrative or technical. We should study them carefully so that we may move forward purposefully and successfully in orderly land use during the coming years, when technological changes in industry and the use of new forms of energy could radically change the whole ecologic pattern of development in the economic region.

In analyzing these examples, I have come to certain conclusions:

1. The history of tribes, nations and races is one long record of regional realism in terms of security and productivity, sought through the expansion and contraction of regional boundaries. The concept of a region is intangible and subject to change and fluctuation. This imperialistic-like movement going on in widely diversified areas, has been



countered with an opposite centripetal movement, gathering force to preserve the smaller and more intimate areas. No effective change can be worked in the regional unit on the basis of past historic association; what one must look for is not the ancient ecologic structure but the emerging one. On this reality is fashioned our conception of planned growth and adaptation and renewal as a continuing conscious process.

2. The basic regionalizing principle that lies behind the spatial structure of society is shown by the emergence of a new type of region coming from a reduction in the scale of local time-distance, through the aeroplane and the motor vehicle extending the old horizons of the community and introducing a territorial division of labor among local institutions and neighboring local centers.

3. The realistic system which recognizes specific supra- and sub-regions in their actual spatial arrangement is the only one in which regional knowledge can be organized into a single system for regional planning purposes, depending on growth and adaptation concomitant with the efficiently organized administration of such.

4. The major aspect of regional planning is its purpose as insurance—insurance of man's security in the present, of a more spacious and secure pattern of living for the future.

British experience seems to show that it is a waste of time to expect government authority to co-operate for planning purposes purely on a voluntary basis. Thirty years of effort under the voluntary system produced negligible results. Ten years of effort under the new system of statutory power has produced some realistic development plans, covering practically every acre of land in the country.

The experience of the P.F.R.A. has proven that a one-facility kind of regional plan is inadequate. The emphasis on agricultural purposes has led to a number of anomalies and fails to take account of the nature of the prairie economy. Many people are now asking whether objectives of water developments in the Prairie Provinces should not be modified. Van Vliet suggests that further improved resource adjustment is required, i.e. a broader and more comprehensive organizational arrangement, taking account of the integrated uses of resources and better co-ordination of related agricultural food distribution programs and activities.

These points seem to indicate not only a shift to new national policies but also a plea for intelligent regional planning of a comprehensive nature.

As Arthur Parks says "the time has come when we might re-examine our approach to national economic development and orient our concern to the regional level." He notes a move in this direction by the

federal government in the creation of the P.F.R.A. He further suggests that the federal government provide financial and/or technical assistance for resource research, and industrial resource development, the conversion of marginal agricultural areas to higher economic uses, and technical training.

Canada's growing strategic and economic position in world affairs gives her more opportunities than ever to develop her resources properly. These opportunities call for a new sense of responsibility. Planning is one of the chief methods of meeting our responsibilities and making use of our opportunities. However, Canada is so large that planning from the center is scarcely desirable or even feasible. On the other hand, piecemeal planning on an *ad hoc* basis in pin-point locations; planning of one resource alone, is not going to solve our development problems. National and local interests meet in the region. The basis for planning, therefore, narrows down from the nation and broadens out from the city to become the region.

This is not to say that there is no call for a national policy. There is! But it will be strengthened if it becomes a synthesis of regional planning.

I make no attempt to claim any broad regional predestination. Changes in regional character and regional limits can indeed occur so swiftly and effectively that they go unnoticed or unappreciated until their implications have grown out of all proportion to their origins and place untold burdens on later generations.

For these reasons, it is not necessarily desirable to establish administrative regions in any rigid form—for human affairs are dynamic, not stagnant. Planning administration, as such, does not solve planning problems; it merely seeks to create favorable conditions for finding solutions for such problems.

By the same token, it is vitally necessary to study broad economic areas within which regional recognition is possible, and it is equally vital that these studies should be repeated at regular intervals.

When land is studied from a regional point of view, we are no longer interested in the claims of one land use alone. On the contrary, we try to work out a basis for the interdependence and interrelationship of all the uses, recognizing that they are all dependent on the region. No development can ignore the region which gives it birth. Otherwise, it may become a cancer, ultimately leading to regional decay.

#### Discussant (Mr. PARKS)

Everyone will agree that in a country the size of Canada there must be many regions. It is more difficult to determine how many regions there are and to delineate the boundaries. Regions may mean

different things to different people depending on special interests, disciplines and prejudices. It is natural that it would be difficult to reconcile the geographic, climatic, political, economic and social characteristics inherent in the term into some consistent and meaningful concept.

I am going to assume that there are six broad economic regions in Canada—the Atlantic Provinces, Quebec, Ontario, the Prairie Provinces, British Columbia and the Northwest Territories with the Yukon. There are special circumstances and situations within these several regions which make this a precarious assumption. Nevertheless there are sufficient economic, political and social conditions and interrelationships within each to justify this concept of broad regionalism. In addition this delineation of Canadian regionalism permits the economist access to data on employment, unemployment, output, income, values and other measurements not regularly available on any other regional basis.

I want in the next few minutes to draw some economic comparisons among these regions, using the Atlantic Region as the basis of comparison. I want also to mention how the principle of P.F.R.A. might be extended to assist in the rationalization and development of economically retarded areas, with special application to the Atlantic Region.

During the first thirty years of the present century the economy of the Prairie Region, based on wheat as a main crop, took shape. Its development was based on an expanding world market in wheat and favorable general market conditions. It reached a peak between 1909 and 1911 and then proceeded more slowly, responding to the ups and downs in general economic conditions. Between 1921 and 1926 there was a period of retrenchment when the number of farms was reduced and the average size of the farm was increased. From 1931 to 1941 there was an extensive readjustment to market and drought conditions. During this period many of the mistakes of early settlement were discovered. The depression was particularly serious for an agricultural area which specialized in producing wheat for the export market. On top of this, drought struck with a severity which resulted in further farm abandonment and much hardship for many farmers.

The need for a program of land rehabilitation and utilization, water storage, and resettlement was brought home by the drought conditions. This need gave rise to the Prairie Farm Rehabilitation Act. The Government of Canada accepted a responsibility in this regard to the Prairie Region.

The economy of the Atlantic Region remains primarily a resource-based economy. In 1958 primary activity in agriculture, forestry, the fisheries, trapping, mining and electric power accounted for 35 per cent of the net value of commodity production

in the Atlantic Region. This compares with 49 per cent in the Prairie Provinces, 18 per cent in Ontario and in Quebec and 28 per cent in British Columbia.

The net value of primary commodity production on a per capita basis in 1958 was \$511 in the Prairie Region. This is about three times the per capita figure in the Atlantic Region and Quebec, and considerably higher than in Ontario and British Columbia. At the same time the net value per capita of manufacturing production in Ontario was four times that in the Atlantic and Prairie Regions. Again, about 45 per cent of the net value of manufacturing in the Atlantic Region is based on the renewable natural resources of the region. This means that upward to half of the net value of all commodity production in that region is dependent on the extraction of renewable natural resources and the processing of these primary products—or about 65 per cent is dependent on the extraction and processing of all natural resources.

I present these examples to indicate three points:

1. That the broad economic regions of Canada, as I have defined them, are still dependent to a significant degree on resource exploitation and processing;
2. That this degree of dependence varies, however, from region to region; and
3. That the Atlantic Region is, as I suggested earlier, a region which is still primarily a resource-based region.

I should like to make one further point regarding regional differences in resource and resource-based activity. In two of the broad regions, Quebec and the Atlantic Provinces, resource activity tends to be more concentrated in low productivity areas of the economy than is the case in the other regions. In these two regions, and particularly in the Atlantic Region, labor has had a tendency to remain in marginal farming, fishing and woods operations, largely as a result of relative lack of more productive employment opportunities. In Canada the long-term trend has been for labor to vacate these marginal activities, but this has been less pronounced in some regions than in others. It has too, I would suggest, been slowed up during the last few years because of the general lack of sufficient economic growth. It is impossible to examine this matter of resource development except in the context of general economic development.

During the 1930's the P.F.R.A. was established to meet a condition of serious economic hardship in the Prairie Region. The Atlantic Region has been confronted with somewhat similar but more extensive problems for many years. The principle of special assistance to a region in such circumstances might be applied to the Atlantic Region—but on a much



broader area than the application of the P.F.R.A. to the Prairie Region; to involve the whole economic structure. Nor should such a program be restricted to the Atlantic Region. It, or another group, should also be applied to other regions where similar circumstances may exist.

In the case of the Atlantic Region, the Gordon Commission suggested a Capital Projects Commission. Federal funds would be made available to this agency to provide expenditures of capital on basic public services designed to encourage economic development in the region. The agency would assess the need for such public services in the light of development, would assign priorities in their provision, and would co-ordinate all such capital expenditures so as to present a systematic and adequate approach to this problem.

In the Atlantic Region it is also necessary to aim at a rationalization of primary production and some primary processing industries. In relation to resources and markets the region has too many farmers, too many fishermen, too many woodworkers, too many people in sawmilling, and, as recent events have demonstrated, too many coal miners. It is true that employment in these activities is declining, but they continue to hold, in the words of the Gordon Commission, "a disproportionate number of subsistence workers." The aim should be a gradual consolidation of farm holdings, and woods and fisheries operations in fewer, larger and more efficient production units. A policy of this nature would by itself, of course, aggravate the unemployment problem since there would be fewer workers engaged in these activities. It would, however, alleviate the problem of under-employment and would result in higher average earnings for those who remain in primary occupations.

This leaves us with a large labor surplus. Steps should then be taken to raise the level of investment so as to provide new and more productive employment opportunities.

It is problematical how far resource-based activity, even if carried substantially beyond the extractive stage, will result in new employment opportunities directly. It will, of course, have a multiplier effect, and if such new activity is particularly dynamic in encouraging other new activities, substantial new employment would result. At any rate, since we are concerned here with resource development, we will confine ourselves to the resource concept. I would suggest that substantial subsidies are justifiable to promote resource processing activity in areas suffering economic hardship, provided of course that the long-term prospect of such activity is good, with regard to the sources of raw materials, markets, transportation and other factors. This is particularly so if the industry so assisted possesses the capacity

to act as a "cornerstone" industry in a locality—an industry around which other developments can be expected.

I look at the problem of regional development as a national problem and, although provincial and local action is essential, the national authority must play a prominent role in its solution, both financially and otherwise.

Having gone this far I realize that I have omitted at least two important considerations. In the first place, if a major problem of retarded regions is the movement of labor from low-productivity occupations to occupations of higher efficiency, then such productive occupations must be available in sufficient quantity for this and to provide for the normal increase in the size of the labor force. The solution to the problem is confounded in a situation where there are both national and regional insufficiencies in the over-all growth rate. In the second place, this movement requires both geographic and occupational mobility on the part of the people concerned. We are now dealing with the human resource—which must also be highly developed through the educational process to permit it to fit productively and efficiently into the new pattern with human satisfaction and human dignity. In short, the nation has a responsibility to assist retarded areas, and the cost of the failure to accept this responsibility will be directly related to the costs, both material and human, associated with a continuation of the conditions of retardation.

#### Discussant (Mr. GUSHUE)

I have found it necessary, in order for my remarks to be brief, to make a selection of points. In the time at my disposal, I can touch only lightly in some aspects, and press heavily on none. Therefore, somewhat arbitrarily I will proceed to my conclusions without giving the reasons and thinking which go into them. This is a happy position. However, if you disagree, you will find it difficult to impugn the reasoning, since there is no time for me to indulge in its presentation. Some conclusions have been reached reluctantly, and I would be surprised if they were found completely acceptable.

I do not quarrel with the generally accepted definition of regions as homogeneous areas within the national, but not necessarily within a particular provincial area. But today I propose to talk firstly of resources, since this is the prime purpose of the Conference, and secondly of regions. This will lead me to talk of resource regions which is not always the same as economic regions.

My first contention is that no resources are exclusively provincial and that all resources are Canadian and have national aspects and implications. In all cases the resource is both national and regional



and at least two governments within Canada are interested. There are often others, but the federal government is always one of them. For example, fisheries is international, energy is nation-wide.

If it is accepted that the conservation, management and utilization of a resource within Canada must always be a matter of interest to more than one government, it is axiomatic that conservation, management and utilization, and indeed disclosure or research, calls for clear and cohesive policy in the interests of the nation. The day is past when we could leave them to the prospector, the entrepreneur, the speculator or promoter—nor to one only of the interested governments. There must be far-sighted and co-ordinated control and management in the interest of the people of Canada. In this there is no room for dissent or division. How can this be ensured?

Who are involved? As I have said, governments; federal, provincial and perhaps municipal. Also private interests and private enterprise—or enterprise, whether free or controlled, that may be engaged in utilization or development. Above all the people of Canada are involved. How can positive, unified and cohesive policy be achieved? Firstly, how can it be achieved as between the federal and provincial governments?

More than once I have heard federal-provincial relations termed "horse trading" by a prominent political figure. Is "horse trading," the art of bargaining skillfully from apparent strength or concealed weakness—with a modicum of dissimulation—enough if we are to safeguard and harvest the yield of our national resources in perpetuity? Can we expect within the machinery of the 10 provincial governments and the federal government, that the vast and urgent task of managing and of harvesting, in perpetuity, the yield of our renewable resources, can be hammered out on the anvil of debate? Can the silken thread of sweet reason withstand the strains and stresses, external and internal, which will be encountered. I do not think so. The machinery, as it exists, will be too ponderous and too susceptible to chronic breakdown. In the treatment of our national resources, can the federal position be that only of an interested, helpful, well meaning co-ordinator, strong in intention, but sometimes weak in powers? Similarly, I do not think so.

It follows that to achieve the necessary result there must be some authority or agency, operating in the interests of all—the interests of the nation—working from economic and not political considerations, and not plagued by political storms or expediency. An authority is required to which all governments will subscribe, to which they will cede authority and from which they will gain strength. This must be a national as distinguished from a federal, or provincial, or federal-provincial body. There is a distinc-

tion. A debating society is not enough. This will not be easy, but in one way or another it must be accomplished.

It is possible that the Constitution of Canada could conceivably be adequate to the task of resource development. This is all to the good provided that it is not achieved painfully through slow and tedious empirical processes, operating from the particular to the general. I think we have to move in the other direction; from the general to the particular. One of my fellow speakers mentioned the fact that the Gordon Commission of which I was a member, recommended a "Capital Projects Commission" suggestion for provision of capital grants by the federal government to the region, to be dealt with on a regional basis with supervision by an "appropriate agency" of the federal government. I regarded this as one of the most significant and interesting proposals of the Gordon Commission, but so far to my knowledge none of the provincial governments concerned show any sign of interest. This illustrates the result of the policy of going from the particular to the general.

Before making my final point, there is one other: the operative agency in proper utilization. Will it be private enterprise, state enterprise, Crown corporations or other? Free enterprise, with some justification, is traditionally critical of government intervention in business. The slogan of the U.S. Chamber of Commerce—"More business in government, less government in business" reflects the general attitude of business. But this is a vast enterprise, and the profit motive alone, and the activities of unconnected and perhaps rival groups, may not be equal to the task. There will have to be some hitherto unknown form of marriage of the powers and responsibilities of government, its brains and resources, with those of business.

My last point is based on the massive assumption that by now we regard the resource region as Canada and agree that some new form of operative organization, working on a continuing and not a sporadic or *ad hoc* basis, is desirable, to make full and effective provision for the development and proper management of our resources. Professor Lederman opines that the Constitution of Canada could be adequate for the task of such development. If this is so (and I have forgotten most of the constitutional law I ever knew) it must not be wrecked on the stormy shores of political controversy, federal or provincial, or both. If this is not so, let us change the Constitution. Neither course will be easy, but in considerations of this magnitude we must remember that constitutions were made for people, not people for constitutions. Constitutions have in most cases been changed by revolutions, but change can also be achieved by evolution. In this great endeavor we are mutually

dependent. We need the combined energies of all, in research, in management, in capital and credit, in brains for development and utilization of governments at all levels, of enterprise and of the individual.

The public weal demands it.

Now my answer to all questions which may be asked will be:

"What other way is there than this?"

## DISCUSSION

A major aspect of the morning's discussion concerned the question of the nature and implications of motivations to planning. It was noted that the identification of motivations should be one of the meeting's chief objectives. It was recognized by the meeting that the existence of a crisis situation has historically been the major stimulant to planning action. Planning so stimulated, however, is almost always partially conceived and too late. It was, however, agreed by the meeting that this motivation should be replaced by ones which stimulate action that will result in the avoidance of such crises as far as possible. A continuing sense of urgency, it was agreed, must therefore be established in order to make possible adequate resource planning. In order to create this sense of urgency two basic requirements were identified: First, the taking of a comprehensive inventory of resources which will provide the factual basis for identification and analysis of problems. Second, a continuing program of public information and education.

In the course of the discussion leading to these conclusions, a number of points and observations were made.

One participant particularly noted the need for recognition of the problem of regional inter-city planning in densely populated regions such as the St. Lawrence Lowlands and Southern Ontario. He described the situation as being one of critical problems of resource use created by lack of recognition by cities of their place as part of a region, and by the contradictions and waste associated with the effects of unco-ordinated action in single programs and by single resource agencies such as highway construction, urban zoning, water pollution, and watershed authorities.

It was noted that the different growth rates that exist between broad regions of the nation is very possibly a major stimulant to consideration of planning needs. There are national and regional crisis situations of varying nature and proportions, the crisis nationally being one related to unemployment and lagging growth rates.

It was noted that in the field of water resource planning there is an immediate need to program on the basis of a thirty-year forward picture, and that adequate planning of this kind is inhibited by lack of a regional approach, although real progress has

been made, as with the Eastern Rockies Forest Conservation Board. The causes of the lack of adequate planning were identified as the need for education of the public to an awareness of the need, and the lack of regional planning, now complicated by differing methods of operation among provincial agencies concerned.

There was a discussion of the possibility that in view of the heavy local use of recreational facilities by local people, and the nature of the improvements and programs required, the need for regional planning for recreation needs can easily be overstressed.

Forward projections of public needs for use of resources are of very great value for planning, but in the case of some resources such projections are very difficult to make. In agriculture they may be made most easily because of the stability in physical food needs.

The definitions of regions as contained in the assumptions were questioned in a number of respects, and specifically as to the combining of Newfoundland and the Maritime Provinces, on the one hand, and the separation of Ontario and Quebec on the other.

In the discussion on resistances there was considerable enumeration of the various aspects of this question. Major conclusions on which there seemed to be very considerable agreement were:

1. That there is a noticeably improving level of awareness of need on the part of the public.
2. The importance of adequately communicating the necessary information and concepts to the public cannot be overstressed, in particular that the knowledgeable person too often speaks as if he assumed knowledge on the part of the public which in fact it does not have. The great need for extension, leadership, education, and people well trained in this communication task was brought out.
3. There is a major area of resistance inherent in the structure of political institutions, powers and authorities where these do not correspond to the structure of authority needed for regional planning.
4. There are real resistances to planning in the private sector—individuals and business. The basis for the resistance is individualistic and private enterprise traditions of western society, and in

many cases the experience of the private sector with past planning efforts.

5. A particular point was made that the interrelation of interests (e.g. retail trade in industry) must be recognized as not being self-evident to many of those concerned, and must not be assumed to be so.

6. Note was taken of the possibility that under regional planning, conflicts might arise between the pattern of industrial development encouraged by the regional planning authorities and the industrial development goals of local areas. Views varied on the extent to which this is a problem, some believing that local initiatives and competition need not conflict with the basic resource planning, survey and information functions of the planning agency. On the other hand it was noted that lack of planned regional direction to development can lead to misallocation of resources, and competition among localities can lead to the giving of concessions that jeopardize the adequacy of the tax base.

7. The problem was raised of resistance to planning based upon the belief by single provinces or areas that financial assistance may be obtained in greater amount if they do not subject themselves to a larger plan. There was considerable discussion of the problems of federal financial assistance in respect to the need for formulas for assistance that provide certainty and uniformity of application, and the need for flexibility to meet varied conditions. The meeting on the whole agreed there must be some accommodation of these two objectives.

The preceding discussion emphasized the need to ensure that each development problem be dealt with in its appropriate regional setting, and on the level of the appropriate size of region to the program. Otherwise real problems would arise. The need here is for flexibility with co-ordination.

It was noted that the review of resistance was not in any sense a reflection on or assessment of the degree of success in development planning and co-operation that has taken place.

On the basis of the discussion of needs and resistances, the Workshop then considered forms and functions of organization for planning. Aspects of the problem discussed were degree of authority, permanency, functions and structure of planning agencies, their relationship to existing agencies, and the question of the staging of planning agency development.

The Workshop recommended the setting up of a National Resources Council consisting of appointees, governmental and non-governmental, of both federal and provincial governments. Its functions would include:

1. The delineation of resource regions and the setting up where considered desirable of ancillary regional resource councils crossing where necessary provincial boundaries.
2. Advising the Government of Canada on national policies for development of resources.
3. Suggesting to provinces programs for resource use and development.
4. Providing services such as libraries, information, research and engineering.
5. Allocation of funds provided by the Government of Canada to assist provinces with approved development programs.

Regional resource councils established by the National Resources Council should exercise consultative and advisory functions.

The Workshop was further of the view that other powers, and a high degree of authority, will ultimately be found necessary. Discussion of such powers, and of organization, finances, etc., were thought to be suitable subjects for the early meetings of the National Resources Council.





# FRONTIER REGIONS

Thursday, October 26, 1961

"It seems evident that the paths we are pursuing in the north today—resettlement, greater utilization of wildlife resources, handicrafts and the rest—are not leading us to the desired goal. They are but useful props that by themselves are too weak to support the tottering economic structure of the Eskimos until we erect the solid pillars (more enduring and satisfying than the fur trade has been) on which to build a prosperous Arctic and sub-Arctic. . . . Nor can we accept with equanimity a long inactive period during which our Eskimos and Indians will steadily disintegrate, preserved from extinction only by government doles."

*D. Jenness, "Human Resources of Canada's Northlands," Lead-off speech, Frontier Regions Workshop A.*

# *Introduction*

Two workshops were assigned studies of "Frontier Regions." Workshop A was asked to study the significance of communities and social capital in the development of frontier region resources and Workshop B took as its subject the requirements for the development of renewable resources in the frontier regions.

Workshop A was able to identify some of the problems of community and social development on the frontier. While avoiding any concrete proposals for solution of these problems, the Workshop did establish that there is a need for more research on frontier problems and recognized that "an orderly and beautiful man-made environment" was an objective that

should be emphasized in all discussions of frontier development.

Workshop B was distributed among three subgroups which took planning for a diversified economic base in frontier regions as a common topic for discussion. While the conclusions and recommendations of the three groups varied in detail, there was agreement on the principle that development of frontier regions should be planned to proceed in an orderly manner on a sound economic base. Such development would be possible if detailed knowledge of resources, conditions and techniques could be obtained through surveys, inventories and research.



# *Frontier Regions Workshop A*

The significance of communities and social capital  
in resource development in frontier regions.

- Chairman: SAMUEL TRACHTENBERG, Executive Secretary, Manitoba Development Authority.
- Co-Chairman: W. M. DRUMMOND, Economist, Agricultural Stabilization Board, Canada Department of Agriculture.
- Lead-Off Speaker: DIAMOND JENNESS, former Chief, Division of Anthropology, National Museum of Canada.
- Discussants: IAN MACLENNAN, Chief Architect and Planner, Central Mortgage and Housing Corporation.  
H. B. HAWTHORN, Professor of Anthropology, Department of Anthropology and Sociology, University of British Columbia.
- Rapporteurs: D. W. CARR, Consulting Economist, Ottawa.  
T. M. BELLEMARE, Economist, Quebec Department of Natural Resources.

## **Lead-off Speaker (Mr. JENNESS)**

I shall omit all consideration of the white population in our northlands, and discuss the natives only—mainly the Eskimos, because they provide the least complex case study, but to some extent also the Indians, including the Métis of northern Saskatchewan and northern Manitoba.

It was a strange and not too friendly world that greeted Canada's earliest immigrants from Europe in the 16th and 17th centuries. So slight and irregular were communications with their homelands that they stood virtually alone, obliged to carve out an entirely new life from the resources of the unknown land around them. Their firearms protected their settlements from being overrun by hostile Indians; iron axes and ploughs, domestic animals and the numerous food plants they brought from the Old World enabled them to win a more secure and comfortable existence than any inhabitants of Canada had known before them. Even with these advantages, however, their life was nearly as rough and primitive as that of their Indian neighbors. Consequently, it was on a relatively equal footing that, after some preliminary hostilities and mutual adjustments, white pioneers and uncivilized natives proceeded to exploit co-operatively the resources of the lower St.

Lawrence valley. The few adventurous whites who penetrated the spruce and birch forests north and west of that valley adopted the hunting and fishing techniques of the Indians, married native women, and either melted into the Indian bands or returned to the white settlements to bring up their offspring in the shadow of a Christian church. Conversely, a few Indians embraced Christianity, abandoned their wandering hunting existence, and adapted the sedentary farm life of the whites. Provided that the outside world did not shatter their isolation too rudely, the two races seemed destined to coalesce within a comparatively brief period.

Unfortunately, their relationships underwent a profound change with the growth of industrialization in Europe, and the vast flood of immigrants it drove across the Atlantic. A noble mission glowed in some of these immigrants . . . (who) aspired to spread the gospel and convert the Indians to the Christian faith. At the same time they claimed the right to seize all the conquered land and either reduce the native inhabitants to slaves or peons, or else to push them impatiently to one side. Throughout the agricultural zone of Canada the European colonists chose the latter policy: they considered the Indians not assets, as peons can be, but encumbrances, and in due

course confined them to narrow reserves. There most of them remain today, segregated enclaves that contribute very little to the nation's economic prosperity, and nothing at all to its social advancement. They represent a human resource which we have taken great pains to neglect.

Very different, despite the rather similar circumstances from which it sprang, was the policy of New Zealand, the country in which I was born and brought up. Today New Zealand's Maoris number roughly the same as Canada's Indians, 150,000, and like them constitute a small minority in the white population that surrounds them. Unlike our Indians, however, they share every walk of life with the whites, mix freely in white society, and play their full part in the development of the country. With all this, too, they have preserved their pride of race. I do not believe for a moment that our Indians are less intelligent than the Maoris of New Zealand, or that they have less reason to be proud of their racial history: but I have yet to see one of them elected to Canada's Parliament, or selected by a Canadian Cabinet to occupy for several months the seat of the Prime Minister.

But let us return to our subject. North of Canada's agricultural zone stretches a broad belt of forests, most of them too remote from large markets to serve any but local needs; and beyond the forests lie the barren rock and tundra of the Arctic. The principal economic resources of the latter region are its minerals, its wildlife, its fish, and its Eskimos. A future generation may exploit the mineral wealth it doubtless conceals, but today only one small mine is operating beyond the forest belt, a nickel mine in Rankin Inlet. During the 19th century, indeed, it was not the minerals that attracted whites to the region but the wildlife—first the Greenland whales, then, toward the close of the century, the foxes and other fur-bearing animals. From roughly 1900 A.D. onward, pressure from traders, and the allure of the goods they offered in exchange for furs, gradually enmeshed the Eskimos into the economy of civilization and broke down the ancient way of life that had sustained them in the Arctic for at least 5,000 years. More and more the natives resorted to the trading store for tools and weapons, clothing, and to some extent also food, all of which they had previously secured from their own environment and by their own efforts. And more and more their independence evaporated until at last an experienced trader and administrator could write, just eleven years ago:

The fact has to be accepted that the Eskimos of today could not survive in the Arctic without much of the equipment and supplies that trade stores make available to them. *We therefore have to consider how these people are to be assured*

*from year to year of sufficient income to buy the minimum they must have in order to live.*<sup>1</sup>

In the northern forests contact with the white man has reduced the Indians and the Métis to the same condition as the Eskimos; for they too, from an even earlier period, were swept into the meshes of the fur trade, chained to the money economy of the trading store, and deprived of their self-sufficiency and independence.

Today we know with certainty that neither Indians nor Eskimos can obtain, from trapping alone, incomes large enough to keep them from starvation. From the very outset, indeed, trapping was an unstable base on which to build the welfare of a whole people. For one reason, the numbers of the fur-bearing animals fluctuate so greatly from one season to another that neither the trapper himself, nor the trader who sometimes grubstakes him, can ever estimate what will be the size of his catch. Fur prices too fluctuate, because they reflect the whims of fashion; and since 1930 they have shown a marked downward trend under the impact of two unpredictable factors, fur-farming and competition from synthetic furs. On the other hand, northern freight charges have increased, and the prices of all goods in the trading stores have doubled and in many cases trebled since the beginning of the century, so that even though a change in technique may sometimes increase the fur catch of the individual trapper, and with it his money income, the purchasing power of that income has undergone a catastrophic decline.

Just how large an income the Indian or Eskimo requires to maintain himself and his family, on the minimum standard it today considers acceptable, varies from place to place according to the remoteness of the region, its fish and game supply, and the degree of the family's sophistication. For an Indian family in the Mackenzie River basin the Indian Affairs Branch estimates \$1,500-\$2,000 in cash and kind. The minimum figure for an Eskimo family might be \$1,500. In each case a major cost is a small boat with outboard motor for travelling, fishing and hunting.

Now let us see how much of his income comes to the Eskimo in hard cash. The Hudson's Bay Company has calculated that during the four-year period from 1948 to 1951, when most of the northern airfields had been completed and the DEW Line had not yet lured away some of the best hunters and trappers, the yearly cash income of an Eskimo family did not exceed, on the average, \$452, of which the government provided nearly half, viz. \$154 by way of family allowance and \$42 in direct relief. Trapping which had been the Eskimo's anchor-line dur-

<sup>1</sup> Cantley Report, 1950, P. 55. MS. in Library, Department of Northern Affairs and National Resources.

ing the preceding half-century, was contributing only 40 per cent of his income, and wage employment only 16 per cent.<sup>2</sup> Wage employment has increased a little since 1951, mainly through the construction of the DEW Line, the erection of schools and other government buildings, and the operations of the nickel mine on the west coast of Hudson Bay; but during the same interval the income from trapping increased but slightly, while relief expenditures doubled.<sup>3</sup>

Mineral explorations and mining operations have brought a flow of capital and labor into northern Canada during the last half-century, but the inflow hardly touched the Indians after the early construction period, and the Eskimos even less; for southern entrepreneurs seldom employ native labor, and then only on unskilled jobs of usually short duration. Today the DEW Line stands complete and offers very few jobs to outsiders, the nickel mine in Rankin Inlet may shortly close down, and the government's school-building program in the Arctic has passed its half-way mark. A fair amount of construction still continues, but it provides wage-employment for no more than 5 to 10 per cent of the Eskimo labor force. Another 5 to 10 per cent works for the Hudson's Bay Company, the missions, and various branches of the federal government, particularly the R.C.M.P. and the Department of Transport; and perhaps 2.5 per cent still labor in the nickel mine. Roughly 75 to 80 per cent, however, have either no jobs at all, or only casual ones such as stevedoring during the brief navigation season. Is there any hope of lightening this terrible burden of unemployment in the foreseeable future?

To answer the question with assurance we need to know the answers to two other questions. First, what military value does the Arctic possess? The majority of our military experts, it would seem, still attach great value to the region; and as long as they hold this view, public opinion will compel the Canadian government to continue spending large sums of money in the Arctic for the defence of the "free world," thereby giving rise to many jobs, both skilled and unskilled. But if ever the experts should revise their judgments and downgrade the Arctic's military

importance—and some of them already have—then both public and government will probably lose interest in Canada's far north, will divert the millions of dollars she and the U.S. have been spending there on military and paramilitary establishments to more productive enterprises farther south, and conceivably write off its 11,000 Eskimos as an unfortunate burden that must be shouldered with other burdens, but not given more support from Canada's taxpayers than its numerical proportion in the nation's population, .06 per cent, would justify. Our legislators may even conclude, with what doctrinaire economists might consider irrefutable logic, that it is foolish to support the Eskimos at all in a region that produces little of value except fox-furs; that unless (or until) we discover and develop minerals or other resources in the Arctic, it would be better to settle the majority of its inhabitants in the south, and there infiltrate them into such of our occupations as would bring the nation most profit and themselves most security and contentment.

For the moment, then, our first question hardly admits of an answer. Equally difficult is the second, viz. how rapidly will mining expand in the Arctic, and how many jobs will it create that Eskimos can fill at least potentially? Many geologists believe that the region contains extensive deposits of petroleum, and probably also of useful minerals; but their opinion needs to be verified by exploration and drilling, which cannot be accomplished in six or twelve months. Furthermore, even if rich oil or mineral deposits should come to light, deposits that compare favorably with those man is exploiting elsewhere, they may well remain untapped for 20 or 50 years, because the high labor and high transportation cost of northern operations may, for a long time to come, lock the doors to world markets.

I suspect that our individual assessments of the world's political prospects and economic requirements, and our individual natures, optimistic or pessimistic, will profoundly color the answers we give to this question. I myself incline to be pessimistic, and believe that mining will creep northward in Canada at a snail's pace only.<sup>4</sup> We must never forget, however, that every new mine or oil field that does come into operation there can bring fresh hope for Eskimo and Indian regeneration. A new iron mine in the Labrador Peninsula that gave permanent em-

<sup>2</sup> Christensen, N. O. *Some Information on the Canadian Eskimos*, 1952. MS. of a translation from a Danish source, in Library, Department of Northern Affairs and National Resources.

<sup>3</sup> Official figures seem to indicate that during the 10-year period from 1951 to 1960 the licensed trapper in the Northwest Territories obtained from his fur catch an average yearly income of \$412. During the last three years of the period the average dropped to a little over \$300. The figures cover trappers of all races, Indian, Eskimo and white, and their catch included several high priced furs (mink, marten, beaver, fisher and otter) that are restricted to the forest zone. Dr. J. W. VanStone, who studied the Southampton Island Eskimos in 1959, calculated that fox and polar bear skins had given them, from 1949 to 1959, an average income per family of \$300 (*Anthropological Papers of the University of Alaska*, Vol. 8, No. 2, May, 1960, p. 85).

<sup>4</sup> In the nine years from 1950 to 1958 the number of workers employed in the mining industry in the Northwest Territories (excluding Quebec) rose from 900 to approximately 1,200, a percentage increase of 33% indeed, but a numerical increase of only 300. About 80 of them were Eskimos, all employed in the nickel mine at Rankin Inlet. None, or virtually none, were Indians; but one hopes that the impending development of the lead-zinc ores at Pine Point, on Great Slave Lake, will open up a number of jobs for the local Indians, and perhaps too for some Eskimos.



ployment to no more than 500 Eskimos could solve today's income problem among one-third of the Arctic population, since the total Eskimo labor force, excluding women, numbers little more than 2,000.

If my reasoning be correct, we must accept the possibility, if not indeed the probability, that defence and related projects may shortly cease to engage even the relatively small numbers of Eskimos they employ today; also that the development of the Arctic's mineral wealth may suffer a lengthy delay. Yet even if that should happen, are there not other resources which, effectively exploited, will require the labor, and furnish the income, that the Eskimos need to restore their solvency, and to banish the demoralization and apathy that idleness or unremunerative employment, and dependence on welfare money and services<sup>6</sup> doled out by the government, is already spreading through their ranks.

The federal government is earnestly searching for such resources. Long ago it established in the Mackenzie Delta a reindeer industry that now lies dormant and perhaps moribund. Today a reindeer industry appears more and more impracticable on the North American continent, although in Alaska, and perhaps also in Canada, it has repaid, socially if not financially, all the money and effort the two governments have expended on it.

There have been other experiments. A few years ago federal authorities introduced a few sheep and poultry into the Chimo district, hoping that they would thrive and multiply as they have in southern Greenland; but the hungry sled dogs of the Eskimos quickly exterminated them, as they had previously exterminated the caribou on Nottingham Island. The authorities toyed also with an eiderdown industry in Hudson Strait, knowing that the collection of eiderdown has been very profitable in Iceland; and they fostered white whale fisheries at Churchill and elsewhere, trusting that with modern techniques and greater knowledge the industry might take root and endure, even though earlier experiments sponsored first by the Hudson's Bay Company, and later by the government itself, succeeded for a few years only and then collapsed.

All these efforts to buttress in various districts the shattered economy of the Eskimos have ended in disappointment. Today two enterprises, and two only, are yielding encouraging results. One is the handicraft industry—soapstone carving, printmaking, skin sewing, basketry etc.—which is concentrated principally at Cape Dorset, Povungnituk, Rankin Inlet and elsewhere in the Hudson Bay region, but occurs also in one form or another at Coppermine and Tuktoyaktuk in the Western Arctic. In 1959 art objects produced at Cape Dorset yielded that settle-

ment's 330 inhabitants \$22,000, a tidy sum which, evenly distributed, would have added some \$300 to each family's income.<sup>6</sup> Then there is the second enterprise, salmon fishing and char fishing, which the Hudson's Bay Company promoted during the 1880's in the Ungava area, and abandoned about 1931, after working the Koksoak, George and Whale Rivers for nearly fifty years with varying but generally diminishing success. The federal authorities revived the industry in 1958, and in the following year organized the 110 Eskimos on the George River into a fishing co-operative which markets its catch in the luxury restaurants of Montreal and New York.<sup>7</sup> Now the authorities are investigating other Arctic and sub-Arctic rivers that show promise of supporting similar co-operatives.

Unhappily neither this fishing industry nor handicrafts seem capable of great expansion. Both possess inherent weaknesses. The market for Eskimo (and Indian) handicrafts is fickle, as we and the United States discovered long ago on the Pacific Coast; and very few rivers in our Arctic carry runs of char or other fish larger than are needed for purely local consumption, besides which any market built on the food tastes of a luxury-loving public can hardly be other than shaky.

Well-informed officials in the federal government recognize these weaknesses, and therefore are not pinning their faith to any single remedy. They hope that by helping the Eskimos to utilize their local resources more fully, and by promoting tiny enterprises here and there wherever it appears feasible, they can appreciably increase the desperately low incomes of the majority of the Eskimos, lessen their dependence on relief, and raise their living standards to a level that, even if still very low by southern standards, will tide them over the depression that today holds the north in its grip. But the problem is complex. No one can pretend to calculate the rate of economic expansion in Canada's north: no one can tell the taxpayers of southern Canada whether they will have to feed and clothe most of their fellow-citizens in the Arctic for another five years only, or for fifty; and whether the period is five years, or fifty, what will happen to the natives' already low morale in the interval?

Meanwhile the native labor force in our north, Indian and Eskimo alike, is growing: the Eskimo population, for example, now numbers almost 11,000,

<sup>6</sup> In 1960 sales of the Cape Dorset art objects yielded more than \$60,000 and their promoter, Mr. J. Houston (who is not merely an artist himself but an extremely able organizer), is confident that they will yield over \$100,000 in 1961 when the full returns come in. But no other Eskimo settlement has even remotely approached Cape Dorset's record.

<sup>7</sup> In 1960 the char fishing at George River yielded each of the 25 workers about \$300 net for a season that lasted less than two months. In 1961 the catch was smaller, and the net income for each worker only about \$150.

<sup>6</sup> e.g. housing, fuel, even clothing and equipment.

and is increasing at the rate of about 3.3 per cent yearly. Its increase stems from a high birth rate—far in excess of Canada's national average—and a death rate (especially an infant mortality rate) that is steadily declining. This is the first fruit of a vigorous campaign which the federal Department of Health and Welfare has been waging against tuberculosis and other diseases to which our northern natives are peculiarly susceptible; and each year the campaign is becoming more effective. Already every twelve-month period sees 400 more mouths added to Eskimo communities, 100 new workers to the Eskimo labor force. And our Indian population in the north is increasing at a similar rate.

One must pay high tribute to the Indian and Northern Health Service of the Department of National Health and Welfare, to its hardworking doctors in the field and, most of all, to the devoted nurses who serve in its outposts. But, in our north as elsewhere in the world, medicine's humanitarian efforts are creating a Malthusian dilemma. They are increasing the number of Eskimos and Indians who are unable to support themselves, but depend for part of their livelihood on the charity of their fellow citizens in southern Canada.

At various periods—and the present is one of them—federal administrators have sought a partial answer to the Eskimo relief problem in "relocation," or what we more usually call "resettlement." Ever since the slump in fur prices about 1930 it has been the more southern Eskimos, those around Hudson Strait, the eastern shore of Hudson Bay, and more recently, its western shore, who have experienced the greatest distress. Meanwhile the Arctic Archipelago in the high north, parts of which the Eskimos had inhabited in pre-European times, remained empty—save for the one or two police posts which the government erected there in the 1920's to uphold Canada's sovereignty, and manned continually with two R.C.M.P. officers each and two families of Eskimo helpers. Several islands in this Archipelago contain considerable resources in game. To our harassed administrators, then, what could seem more natural than to colonize them with groups of indigent Eskimos from the south, and encourage those still hardy pioneers to wrest a living from the same regions and in the same manner as their forefathers?

The first attempt—made in 1934—failed: but improved air and sea communications, and the establishment of several meteorological stations in the Archipelago at the end of the last war, created more favorable conditions, and today we have four colonies in the High Arctic—at Sachs Harbour, Resolute Bay, Grise Fiord and Alexandra Fiord—containing in all about 220 Eskimos. We hope these colonies will secure permanent footholds; and if they do, we shall probably add others in the near future. Yet whether

we establish four colonies only, or four times four, they will not solve our difficulties; for they merely raise the lid from the boiling kettle without turning off the heat. They merely postpone the crisis, because with the pressure slightly relieved the Eskimo population in the south will grow more rapidly and soon confront us with exactly the same problem over again.

It seems evident, therefore, that the paths we are pursuing in the north today—resettlement, greater utilization of wildlife resources, handicrafts and the rest—are not leading us to the desired goal. They are but useful props that by themselves are too weak to support the tottering economic structure of the Eskimos until we erect the solid pillars (more enduring and satisfying than the fur trade has been) on which to build a prosperous Arctic and sub-Arctic.

Before we seek a way out of this dilemma let me summarize very briefly the main issues.

1. Such occupations as hunting, fishing, trapping and handicrafts, desirable and useful though they all are, must henceforth take second place to wage employment if ever our Eskimos and Indians are to stand on their own feet, economically and socially, and present themselves as first-class citizens.

2. The Arctic neither offers today, nor is likely to offer for an indefinite time to come, enough jobs, skilled and unskilled, to provide wage employment for more than a fraction of the Eskimo labor force. The government can create jobs, of course, jobs that neither themselves produce wealth nor assist in the creation of new wealth. It can fill the Arctic with government officials who simply administer, and in so doing employ part of the Eskimo population and keep the rest from starvation. But this would merely waste both human and other resources. You cannot create a prosperous city by erecting half a hundred fine buildings and filling them with janitors and charwomen.

3. Although the western Eskimos are slightly more advanced than the eastern, hardly more than a dozen natives throughout the entire Arctic can read and understand today the instructions on a piece of machinery or fill out a labor-employment form. The government has now dotted the coastline with schools, but so great are the teaching difficulties that education is proceeding very slowly. At its present rate only a handful of Eskimo children will qualify for high school within the next ten years, and still fewer will reach matriculation standard.

4. Industry disdains, and will continue to disdain, the untrained, illiterate or semi-literate workman, and it usually hesitates to employ any Eskimo or Indian at all if white labor is available. Today illiteracy (or semi-literacy) restricts to unskilled jobs, in the main, the 15 per cent of the Eskimo labor force



that has succeeded in finding wage employment; and it will continue to do so for many years to come unless the government's educational and vocational training programs can be greatly speeded up.

There are the problems. It hardly seems within our power to speed up the economic expansion of the north and to increase the number of jobs it makes available. That task must be left to industry, although our governments can help a little by building roads and railways, offering tax concessions, and in other ways creating a favorable climate. But economic expansion alone, particularly mining expansion, will not solve our problems; it will coldly pass the Eskimo by, as it has passed by the Indians at Yellowknife, unless they acquire beforehand the education and the skills to contribute to its progress.

Should it not be our immediate task, then, to give the Eskimos those skills? To educate and train them as rapidly as possible, so that they can find remunerative employment, not in the north alone (for that region is not yet ready for them all), but in any part of the Dominion?

I believe that their training is our most urgent task. I believe, too, that because they cannot acquire in the north the skills they need, we should immediately plan to bring out a significant percentage of the most intelligent boys and girls who are just entering the Eskimo labor force, and submit them to a high pressure regime of education and training at selected industrial and commercial centers in southern Canada. Then, at the end of their training, we should send back to the Arctic as many as we can provide with wage employment there, and integrate the rest into our own labor force here in the south—if possible without entirely severing their ties with their homeland.

Some of you may entertain serious doubts whether this policy can be put into practice even though you favor it in principle. After all, the Eskimos are citizens of Canada, and there would be a justifiable outcry if we forcibly removed any groups of them from their settlements to educate them and set them to work on tasks that happen to suit our needs. The Soviet Union has done this, but our country does not subscribe to every communist doctrine or communist practice. What right have we to force the Eskimo out of his homeland?

Yet if we renounce the use of force, can we seriously believe that any significant group of young Eskimos, of the teen-agers who can most readily adapt themselves to our civilization, will forsake of their own accord the environment and the life they have known from childhood, and venture forth into a strange and perhaps unfriendly world where even the conversation and the food will be unfamiliar to them? And suppose some of them do volunteer to

come south, how will the older people fare without them, without the support and comfort which they are entitled to expect from their sons and daughters when their own maturity passes over into decline?

Improbable as it may seem, I myself am convinced that many young Eskimos *will* volunteer to come south, if we carefully work out a suitable plan and sell it to them with the same fervor as we sell our television sets and our automobiles. There will be this difference perhaps: to sell our training-employment project to the Eskimos we will have to be more reliable than commercial salesmen, must never fail to live up to our obligations, and never promise what we cannot or will not fulfill. They will merit a definite assurance that they will never be left stranded and alone, but will be quartered with or near their kin so that they can enjoy the moral support of numbers; that the families they leave behind in the Arctic (or bring south with them) will receive as much support financially as they themselves would have provided had they remained at home; and that the ties binding them to their relatives in the north will be preserved and strengthened by as frequent communications as circumstances permit.

These are not hard conditions. Except for the financial support to the families they hardly differ from the conditions an Italian immigrant expects to find when he disembarks at Montreal or Toronto. It would probably heighten the willingness of young Eskimos to seek employment in southern Canada, and considerably boost their morale, if we enrolled them in a special youth corps with a distinctive name and cap-and-blazer uniform ("Eskimo Training Corps," we could call it, or "Eskimo Pioneers"), and if we quartered them, some in special hostels, others with their families in separate homes,<sup>8</sup> within or just outside some large industrial center where their racial traits would attract little or no attention. During their first and second years we might combine intensive courses in English (their weakest subject) with vocational training, or, given the co-operation of industry, with actual wage employment; and we might supply the financial needs of each Eskimo recruit as we do the enlisted soldier's, i.e. award him (or her) a special kind of scholarship, or pay him a monthly wage, part of which would cover his personal needs and the balance, like the soldier's assigned pay, contribute to the support of his parents or next of kin.

Such, in broadest outline, is the scheme I would

<sup>8</sup> Not long ago the Department of National Health and Welfare suggested this latter arrangement for half a dozen extratubercular heads of Eskimo families who had been hospitalized at Mountain Sanatorium in Hamilton, Ontario. Their disease, though arrested, had left them unfit for their earlier life of hunting and trapping, and the Canadian Westinghouse Company had offered to give them light employment if the government made satisfactory arrangements for their housing.



suggest to meet the present crises, to help us merge the Eskimos into our industrial and commercial civilization and unite their economy with our own. In its initial stage at least, it would complement the vocational training program which the Department of Northern Affairs is already operating, the carpentry, plumbing and other classes it offers at Yellowknife and the diesel engine training it has given at Barriefield; but it would cover a much wider field and last a great deal longer. It is only here in the south, not in the north, that we can train Eskimo teachers and nurses to serve the next generation of their people; Eskimo radio operators, weather observers and technicians to man the Arctic's airfields and scientific stations; Eskimo pilots and mechanics, familiar with the Arctic environment, to operate that region's airlines; and administrators and policemen who have spoken the Eskimo tongue from childhood to guide their relatives into the ways of civilization. We should aim to recruit each year at least a hundred boys and girls between the ages of 16 and 21, train them for periods of from two to six years according to their progress, and at the end, through an efficient placement bureau, assign them to the niches that they can fill most usefully—in northern Canada whenever at all possible, so that they can speed up that region's development.

There you have the barest skeleton of the scheme, which must be worked out very carefully, and perhaps modified in certain details, before we try to put it into operation. That, however, need not delay us at this moment. What concerns us now is its objective, viz. to ensure that twenty or twenty-five years from now no able-bodied Eskimo who wishes to work and raise a family will be prevented from finding employment through lack of education and training; and no Eskimo family, save in unusual circumstances, will look upon relief payments as a normal part of its income.

This objective, and this or a similar program, we should not confine to the Eskimos. It seems equally well suited to our northern Indians, and perhaps to some of the Métis in our provinces. There may be certain advantages indeed in organizing a program under which Eskimos and Indians would share the same training and even perhaps the same lodgments. It might accelerate their learning of English, since their native languages are mutually unintelligible and they could not converse with one another except in our tongue.

May I recall, in conclusion, a little episode in New Zealand just fourteen years ago. I was visiting a high school at Gisborne, a town that contains about 20,000 inhabitants, a large proportion of them Maoris. The school principal led me into a commercial classroom where some fifty girls, nearly half of them Maoris, were learning stenography and typewriting:

girls with jet black hair, brown complexions, dark eyes and heavy features were sitting side by side with others so fair that they could have come from Sweden. The principal told me that he had detected no difference in their marks that he could correlate with racial origin, and that even in this frontier town of Gisborne he experienced no difficulty in placing the Maori girls after they passed their examinations. And he added "The future of Maori and white New Zealanders is one." May we in Canada quickly find a similar solution to our racial problems.

#### Discussant (Mr. HAWTHORN)

First I will consider some of Dr. Jenness' remarks on the Eskimo and other indigenous populations of the North, and then I will add comments on the wider region of the whole northern frontier and the new population which is flowing in and, at nearly the same rate, flowing out again.

I welcome and support practically all that he said about the present and the future of the Eskimo. And no other person living is in a better position to say it than he is.

Dr. Jenness advocates the inducing of young Eskimos to take part in a massive training program which would entail their moving to industrial and commercial centers. I have commented in my Background Paper on the need to provide for those Eskimo and northern Indians who have moved and will continue to move in an unsponsored and unorganized way to the centers. This proposal urges that the influx be selectively encouraged under stipulated conditions of care and support.

I had suggested consideration of getting Eskimo children to live in hostels in towns and attend town schools along with other children. This would have certain advantages, especially those following existing models more closely and utilizing past experience. But Dr. Jenness' proposal is more dramatic and promises more immediate results. It would also have a multiplying effect. If young people gain good wages and good employment shortly after arriving for their training, there would be an immediate and widespread effect on their families, which is not something to be expected of the more normal schooling I advocated. On the whole I would expect good results from his proposal. It offers a satisfactory degree of choice to the participant. And, we know that this factor is even more important in technological and social change than the degree of change itself.

But, I would counsel against optimism even on this proposal. In this respect, I cannot feel that Dr. Jenness' use of the particular New Zealand example is helpful, both because it occurred under very different historical conditions and because the results of wider comparison of school achievement of Maori

and white children are very different from the comparison in his example. More realistically the task of training should be approached with the anticipation that mixed results will be the reward if the greatest efforts are put forth. Any lesser efforts, of course, will probably be followed by unmixed bad results.

It might be noted in passing that this proposal is not an attack on the Eskimo language and sense of identity. The impersonal events of history have themselves constituted such an attack, and forecasting the future of Eskimo and Indian languages and cultures is a different matter from the comments I am making here.

I might comment on offering such a proposal for only indigenous, isolated people. Should it not include training any young people in isolated and remote places? There is obviously a matter of balance involved here. An advanced school or training program can enrich the community containing it. Where there is opportunity for enough local employment, perhaps more benefit follows educating and training young people where they are.

Thought should also be given to the new frontier population. These are the people who take advantage of the opportunities offered by government and industry to move to the new communities.

It is desirable from almost any point of view to slow these people down a little, and perhaps to encourage them to make permanent communities. At present there is a circular relationship binding their high mobility and the generally low level of intellectual, aesthetic and recreational life in these communities.

I think that the provision of opportunities for involvement in a life richer in the mind and in creative action will be enough to slow down the mobile population of frontier communities. But the difficulty is affording and arranging this. It cannot be done without government, if it can be done at all, but it is a task in which money is the least of the difficulties. Probably there is also an actual shortage of people talented enough to direct and carry out the appropriate programs. Early involvement of the people themselves in their own affairs, aesthetic and recreational as well as management seems imperative.

At the same time the possibility of reaching unique community standards, because of the high capacities and qualities of a population which is largely civil service, technical and professional, makes the task an enticing one. So far, high standards of thinking and the arts are excluded by reason of size from small communities anywhere. Perhaps some of these new communities have the advantages to achieve more than has been done before.

This brings me to the point of community develop-

ment. Dr. Jenness touches briefly on two new Eskimo enterprises, some art production and some specialized commercial fishing, which offer some sort of basis for this. He is of the opinion that they have hardly the needed yield or permanence. Elsewhere the isolated and mobile indigenous people lack either sufficient numbers or economic foundation, and it is not likely that community development or co-operative enterprise can play much of a part in the advancement of the Eskimo or the northern Indian for some time.

On the other hand the needed resources may not be missing for other communities on the frontier, where their populations and actual industries may support this integrated approach to a more worthwhile life. And it is appropriate to think of alternative methods of developing these resources, by co-operative, private or government endeavor, depending on the desired scale of the enterprise and the results required of it.

These questions about community development are not ones separated in principle from that of training Eskimo youth. The first requirement is the provision of opportunities which are desirable and reasonable in terms of what people now want. And the second requirement is provision of as much choice and as much feeling of taking part in decisions as can be given. The goal is helping people change in keeping with certain principles, and these two requirements are a necessary basis for either the indigenous or the new population.

A number of the present difficulties are not inseparable from lack of knowledge of the existing situation. Indeed we cannot now define the situation with enough precision. While our analysis is adequate to support broad conclusions, it lacks penetration. A continuing and expanding program of research is desirable. We can work with wisdom largely to the extent that we know more about these people and institutions, and many more subjects. In conclusion, a program of research should continue to be the necessary and welcome accompaniment of policy and administration.

To a high degree every step in frontier development is a step into the unknown. Research should always be its guide, and should always be called in to study the step itself. This is a very sophisticated process but there is no better place to begin than in the north and the frontier regions where the administrations are sophisticated in the use of techniques. The administration of Northern Affairs has established a commendable program. Another is instituted in the Center for Community Studies in Saskatchewan. These comments should be construed as urging the support and extension of such programs.

### Discussant (Mr. MACLENNAN)

Before considering the future of our frontier regions, I believe it useful to consider the past and the present. I am going to be critical because I believe it to be part of my job to be professionally critical and dissatisfied at all times. A great many people believe we have a great deal to be dissatisfied with.

We have in Canada an architectural and town planning past, although much of it has been fast disappearing. Much of it was good and reflected, as architecture always does, the society of the day and the values of that society. Those values included human dignity, security, courage and confidence—even serenity. They built well, with less resources, in difficult and dangerous times. Material of construction varied with financial resources and local availability. They were few in number and gave coherence to our street architecture. Styles were largely imitative and there were varying degrees of success in these early efforts to create an emotionally satisfying physical environment on a great continent of incredible scale. There was a time element involved in the creation of our towns, villages and cities, giving variety and elements of surprise. Scale was important: the height of buildings in relation to width of street and space around created an aesthetic, familiar to all. There were meeting places in front of churches and around the stores. There was a blending of private and public interests and enterprise, there was in fact, a sense of community and an enrichment of people's lives, which have always in the past been the reward of those who gather together to live in cities. Cities have always been indicators of civilization and cultural achievement.

There was of course an economic base for everything, as there must be today, but it was not a goal, rather a condition for achievement and stability.

What about our nation today? We are an enigma to outsiders, and I believe we have not yet found ourselves.

Canadians have been called grey, colorless, timid and conformist. For all our great wealth Canada has been described as a culturally underdeveloped nation and the physical evidence of this is to be seen in our cities, towns and villages. We have of course still many fine streets and buildings and we are getting more of them by public and private development and redevelopment, but these areas are small compared to the over-all Canadian scene.

The vulgarity and general ugliness and disorder which surround us, the overhead transformers and profusion of wires, the wild anarchy of our street furniture, a cheap profusion of materials, the billboarded endless ribbon development and the general trappings of an apparent juke box society have degraded many of our true aspirations and ambitions

for a better Canada. This mongrelizing of Canada has gone generally unremarked and has been complacently regarded. Even Quebec with all of its great traditions and rich cultural background has not escaped. Across our country there is evidence that we have not yet learned to build cities of beauty and order that can compete even with the cities built on this continent nearly 2,000 years ago by the Maya Indians on the Yucatan Peninsula—cities of significant scale and beauty.

Dean Passonneau of Washington University has said: "At the same time that North America has produced the highest private standard of living in history, we have produced the lowest public standard of living in the western world." We are probably only the second ugliest nation in the western world, and this in spite of our great natural heritage and courageous beginnings.

Now I know that we all like vulgarity, and sin is probably here to stay, and that both are regarded by some as evidence of virility and dynamic character. But most of us like our vulgarity in small doses. I know that there are some who prefer to live in squalor, but most of us again, I believe, like order and cleanliness, trees and color, lights and warmth, contrast and surprise, green spaces and promenades, elegance and strength. We love beauty. There is enough evidence to suggest that the public has good taste, to give us all the strength to go on. The public needs leadership, but in the long run it supports the good and condemns the bad. We do face a serious problem in this era of industrial mass production and efficiency. How can we preserve our individual sense of uniqueness and personality essential to the democratic way of life? And what are the implications for architectural and civic design in towns and in great cities with rapidly changing scale?

Now you might ask what this has to do with frontier regions, and why have we failed so far in our settled regions. Before I try to answer, I am going to make an assumption. The assumption may sound trite but I think it is useful to mention it to be sure I am in tune with everyone else: That it is the role of government in democracy to represent and to govern, the role of the professional or public servant is to serve and advise, and set professional standards; it is not the role of the architect or town planner, or any professional, administrator or public servant to set or establish standards of public mores. Value judgments or standards must represent a broad consensus and be established by the public at large. These standards to be effective, must be given voice, force, and direction by government before they can form part of a nation's aspirations and goals. This requires articulate leadership at all levels of govern-



ment, but most particularly in our country at the national level, because we are a federal nation and our lines of communication are strung out across a great continent, inhabited by too few people.

I believe we have failed aesthetically in Canada, up to now, and are likely to fail in the frontier regions as well, for a number of reasons. I will start with my own profession. While we have no right to set mores, our profession is interested in promoting order and beauty, simplicity and efficiency in buildings and in cities. This is our business, our meat and drink. Although our architects are being defeated by the city at the present time, they are rather talented. They are struggling for beauty and order, but they are not speaking with any collective voice, trying to rally public support for the idea of beauty, to make it become a part of the nation's aspirations. If they believe in it, they should speak out—more often and more effectively. They are, as a lot, inarticulate and ineffective when it comes to having a voice in community affairs.

I would like to turn now to the town planning profession (as well as being an architect, I am a member of the Town Planning Institute of Canada, so I feel I can criticize there as well). The town planners are failing, in my opinion, and in danger of becoming a negative profession rather than a creative profession because they have failed so far to establish in the community the support required for their profession.

I will leave the other professions alone, out of respect, and the administrators (really a profession as well), and turn back to government.

This Conference has been called presumably to take

stock and to look to the future. We are all looking hopefully forward, and trying to plan for economic advancement and a better life for more Canadians. But what is this better life we are looking for? Assuming our bellies are full and we are sheltered against the elements and protected from disease, I believe that we are looking for more.

If, specifically, beauty and order and human dignity (which goes with order rather than chaos) are not our goals, outspokenly and confidently pursued, then we are going to fail. I believe it would be helpful for all concerned if this underlying aspiration could be brought out into the open, and made respectable in the country. It is high time we stated it as an objective and an ideal. We have need for an ideal. The consequences of government pronouncement and leadership at all levels in this direction would, I believe, have serious effect. It would give encouragement to us all both public and private. I believe there is public support in this country for such an ideal. I am not suggesting that it become anything more than one of our national objectives. We must spend our money wisely at all times and husband our resources: we have a big job to do. Beauty and efficiency complement each other. The true cost of the development of our present environment is very, very high. We have not had our money's worth and we are not likely to get it in our future development if aesthetics does not become a conscious element in the decision-making process in this country. We have the talent but not the purpose. We will only come of age when this is done, and only then can we fashion a decent and civilized environment in our frontier regions.

## DISCUSSION

At the conclusion of Mr. MacLennan's statement, members of the Workshop discussed the paper of Dr. Jenness and the comments of the discussant, Professor Hawthorn.

Objection was made to Professor Hawthorn's opinion that a co-operative and community program would have a limited benefit for the Eskimos. It was stated, in reply to this opinion, that 14 co-operatives had been organized in the North, and one of these had had total sales of \$100,000 last year. Experience with the co-operatives had been too brief to assess their potential fully.

Dr. Jenness was criticized on four main points in his paper. Critics charged his paper with taking a pessimistic view of the future of the Eskimos; failing to emphasize adequately the need for the indigenous people to participate in community decisions; under-

estimating the amount of employment that would be provided by northern resources development and the growth of government administration; and overestimating the amount of employment that is provided by defence work and the maintenance of Canadian sovereignty.

After Mr. Drummond, the Co-Chairman, had intervened to point out that the Workshop should discuss frontier regions in general rather than the specific problems of the Northwest Territories, discussion passed to community development problems in other frontier regions.

A list of broad assumptions on the problems of frontier social development was agreed upon:

1. That the initial development of frontier regions will normally have to be based on a limited variety of resources and that the members of the

indigenous population who continue to depend on the traditional economic activities, such as fishing, hunting and trapping, will have low incomes.

2. That, until the social environment develops and begins to exercise its own power of attraction, it will be necessary to pay the working members of the new population considerably higher wages than those paid for similar work in other regions, and that these high wages will result in the new population having relatively high money incomes. It is recognized that abnormal disparity of incomes between the new and indigenous populations creates social problems.

3. That the capital cost of providing the transportation and community facilities will be relatively high compared with that in other regions.

4. That isolation and/or special climatic conditions will pose social and psychological adaptation problems for the new population.

5. That new and rapid economic development may pose difficult problems of adjustment for the indigenous populations.

6. That the development of renewable resources in frontier regions will require:

- (a) Primary consideration of social goals;
- (b) An assessment of the potential for development;
- (c) An assessment of the impediments to desirable development; and
- (d) An evaluation of the methods required to overcome these impediments.

7. That the distinctive problems of frontier regions require special and courageous policies on the part of governments and industry, supported by the public at large, together with sound administrative arrangements, to meet development goals of which the nation as a whole could be proud, so that our frontier regions may match and even surpass frontier developments in other countries, keeping at all times the interests of the native peoples in mind.

On the basis of these assumptions, the members of the Workshop set out the major problems of community and social development:

1. The adequacy of the resource base. It was agreed that the resource base varies from community to community in frontier regions and that this resource base should be adequately appraised as a primary step in considering the possible con-

tribution of communities and social capital in such regions.

2. Optimum participation by all the residents in community life.

3. Adequacy of levels of living.

4. How to achieve progress without paternalism.

5. The need for education, training and intercultural communication.

6. Need for adequate continuing research and suitable pilot projects.

7. Need for planned well designed and aesthetic communities.

The Workshop concluded with the following summary of its results:

As a result of our discussion, we have identified some problems about which there is and should be public and administrative concern. It has been an achievement to identify the problems even though the descriptions are probably not the ones we would give if we had more time and sometimes more knowledge. There appears to be agreement that our rough spotting of problems is correct but the discussion shows differences of opinion on description as well as on solutions. To offer any prescription on the basis of rather brief discussions and rather wide differences would be presumptuous. On the other hand, we have established clearly and unanimously the need for continuing, and expanding, the program of research concerned with these frontier problems.

It is the sense of this meeting that an orderly and beautiful man-made environment, complementing a beautiful country such as ours, contributes to the general welfare of men, and, as such, constitutes a highly desirable objective which should be kept to the forefront in all discussions of frontier development. It is recognized that any physical development depends for its support and stability on an economic base and that all solutions may not necessarily be appropriate to each problem in the frontier. This does not mean that modest resources ever justify ugliness. There is too much evidence of other countries with less resources than ours creating highly imaginative and modest communities, serving the needs of peoples in other lands in a most satisfactory manner. It would be defeatist to accept the idea that Canadians do not possess the necessary talents, will and human resources to match the resources of Danes, Finns, Norwegians and Swedes, not to mention Russians.





# Frontier Regions Workshop B

THURSDAY, October 26

Requirements for the development of renewable resources in the frontier regions of Canada.

- Chairman: P. E. AUGER, Deputy Minister, Quebec Department of Natural Resources.
- Co-Chairman: R. E. GROSE, Executive Director, Manitoba Development Board.
- Lead-off Speaker: PETER M. STERN, Staff Member, Economic Development, Arthur D. Little (Canada) Ltd.
- Discussants: K. ACHESON, Regional Director, Ontario Department of Lands and Forests.  
GORDON F. PUSHIE, Director-General, Newfoundland Department of Economic Development.
- Rapporteurs: B. D. McDougall, Executive Assistant, Manitoba Development Authority.  
ROLAND PARENTEAU, Professor of Economics, School of Advanced Business Studies, University of Montreal.

## Co-Chairman (Mr. GROSE)

This is one of the last workshops of the Conference. Others have dealt with the conservation, management, and development of specific renewable natural resources. Our concern today is with methods of bringing about the development and utilization of the resources of frontier regions. Thus, the focus is on those parts of Canada whose renewable resources have either remained untouched or where development has only been spotty. I wish to emphasize that we are dealing with *development* because, in the frontier areas, it is non-use of natural resources that constitutes the primary resource utilization problem.

I think that the theme of our Workshop should be: resource development in the frontier regions requires special approaches and special solutions, because of the environmental disadvantages that so far have prevented these areas from contributing fully to Canadian economic growth.

All the senior governments are agreed that they carry a heavy responsibility for making such development possible. Just what should be the role of government in stimulating resource development? How far, under our system of private enterprise, should governments get involved in preparing the ground for private investment? These are some of the questions with which our lead-off speaker will

be concerned. In doing so, he is expressing a point of view which draws upon his organization's experience with resource developers and also on his knowledge of Manitoba's efforts to bring about the development of its northern resources. We are sure that other points of view will be aired after his presentation.

## Lead-off Speaker (Mr. STERN)

This paper has been prepared to stimulate a discussion of resource development problems in the forested regions of northern Canada.<sup>1</sup> Specifically, we intend to deal with the means required to bring about such development with maximum return to the areas thereby opened up and to the country as a whole.

To begin with, we accept the premises laid down for this Workshop: that the development of frontier regions receives its initial impetus from resource-based activities, and that the cost of providing access to and essential community services for these remote and isolated operations is necessarily out of pro-

<sup>1</sup> The definition of the area is left intentionally vague because of the different connotations given to the term "frontier regions" in the papers prepared for this Conference. Our concern is primarily with the land that lies to the north of the belt served by the main east-west arteries of transportation and within the northern timber line.

portion with the social overhead costs of attracting industry to the settled parts of the country. From these premises it follows that government should give priority to the stimulation of those resource-based industries which hold the best prospect of stability and which provide the "take-off" for related economic activities. The forest products industry meets these criteria of development better than most other capital-intensive ventures.

Although none of the Conference Background Papers refers specifically to the need for "northern" industrial resource development programs, several of the authors express deep concern over the future of forestry and forest-based industry as a pillar of the national economy. They suggest that the country may be about to price itself out of the international market for forest products because of its high cost economy and a continuing neglect of the kind of forest management needed to ensure a supply of high-quality timber competitive at the mill with the raw material of countries hitherto dependent on Canadian exports.

If the forest areas supplying existing mills are in danger of losing some of their markets, is there any reason to believe that new investment can be attracted to the more remote forests of the frontier regions? We believe there is, and that careful study of the production-distribution complex in selected forest areas can establish the economic feasibility of new forest products industries. We further believe that such assessments are a proper function of governments responsible for the administration of underdeveloped frontier regions. The reason for making this claim is that we have had the good fortune, in recent months, to assist the government of Manitoba in the conduct of several investment-opportunity studies in which the northern forests have played a prominent role. This work has enabled us to draw certain conclusions which we should like to offer for general discussion. Firstly, we touch upon the outlook for forest products industry along the northern frontier; then we deal with government actions to stimulate such development, drawing heavily upon our Manitoba experience.

#### *The outlook for attracting new investment*

1. *Relatively low wood cost and assurance of a long-term, non-competitive wood supply for a mill large enough to benefit from economies of scale constitute the north's principal drawing card.* Large accessible areas with sufficient uncommitted wood are getting scarcer, so that the frontier regions will become desirable as soon as an economic production-marketing "package" can be established. The ingredients of such a package are (a) a favorable resource environment (quality of stands, topography,

ease of shipment to mill), (b) a government incentive program which attracts the investor without damage to the public interest, and (c) transportation costs low enough to bring the identified market within the reach of the new mill.

2. *A detectable industry trend to locate small paper mills in major market areas and to supply them with pulp from a single large mill in a low-cost wood area offers new opportunities for northern development.* Because wood may account for as much as 50 to 75 per cent of the total cost of manufacturing pulp, non-integrated pulp mills are still being built in Canada (though not in the United States) near the source of supply. The difference in wood costs can make it more economical to dry and bale the pulp, ship it to the market and redisperse it there than to use wood from areas adjacent to the market-oriented paper mill.

3. *A new entrant into the industry will find it easier to break into the North American paper markets by way of a pulp mill located near abundant timber resources than to attempt production of converted or finished paper products at the outset.* The non-integrated pulp mill has been the traditional route of entry into the industry, and Canada's northern forests can offer the new investor a wedge into the lucrative United States market.

So much for general trends pointing to the potential development of the hitherto untapped forest areas. Specific investment opportunities cannot be identified, however, until all the elements that make a proposed northern operation competitive are thoroughly analyzed. We therefore advance the thesis that the senior governments, as guardians of resource-endowed Crown lands, should play an active role in translating a vague awareness of resource development potentials into an opportunity for the investment community. This kind of initiative requires them to assume responsibilities which transcend the customary resource mapping or inventorying function.

It is understood, of course, that under a system of free enterprise the government's role in economic development should be limited to creating and maintaining an economic climate favorable to growth, and to influencing and guiding the direction of private investment. Yet how can any government adequately protect the public interest without acquiring the information needed to evaluate the likely costs and benefits of a particular resource development project? Clearly, the government must gather much of the information upon which the entrepreneur will ultimately base his investment decision. Why then not share it with him to the extent that disclosure is possible, and why not prepare a case for his con-

sideration which reflects the government's interest in seeing the project undertaken?

By spelling out the development incentives on the basis of which it is ready to negotiate, the government can show its responsiveness to the investor's perpetual search for profitable ventures. In the forest products industry, in particular, the number of opportunities for profit-making investment is large and geographically widespread, and any operator who is initially attracted to a frontier area can be expected to view it as only one of several possible choices for putting his capital to work.

#### *Indicated government actions*

Of paramount importance, to judge by the experience of Manitoba, is the creation of an internal mechanism capable of focusing the views and the capabilities of various government departments and agencies upon a resource-development situation. In Manitoba, this function is exercised by the Manitoba Development Authority, in which the resource departments and agencies are represented. Within the framework of such an organization it becomes possible to formulate strategies for resource development and to ensure that the government speaks as a single voice in negotiations with potential investors. In resource-use situations such as the proposed development of Crown land forests, where the government holds the key to private decision making (control over allocation of forest reservations; setting of stumpage fees, ground rents, and power rates; road building and townsite selection, etc.), flexibility in the conduct of negotiations is in the public interest. To achieve such flexibility, each department concerned must acquiesce in the broad goals of the negotiations and assist in setting the limits beyond which incentive measures to industry cannot be granted.

To the prospective investor, the existence of an organization like the Manitoba Development Authority is an indication that the government "means business" and that his requests for information can be funneled through a single point of contact. Furthermore, by maintaining clear-cut lines of responsibility, the government can ensure the confidential conduct of the negotiations.

The thoroughness with which a government may wish to prepare its "case" for resource development is illustrated, once again, by an example from Manitoba. Resource appraisals are necessarily incomplete until the economic potential of the resource can be ascertained. Similarly, without a clear definition of their market potential, the forests of the north are only a latent resource and cannot be counted upon to add to the nation's wealth.

Accordingly, to establish the feasibility of a forest

products industry along the northern frontier, the government of Manitoba last year commissioned a market survey of the territory deemed to be within reach of a northern pulp and/or paper mill. Since the geographical area which such a mill can serve is determined largely by outbound freight costs vis-à-vis the transport charges from competitive producing areas, it is not surprising to find that a plant in northern Manitoba cannot compete effectively outside of the Prairie Provinces and the midwestern United States. After testing the potential market for a variety of product lines, it was concluded that the growing demand for woodpulp and newsprint warrants the construction of new capacity to serve these regional markets. The usefulness of such information to government and investor alike is almost self-evident.

The market study illustrates the limitations which transport considerations place upon northern development. Assuming that production costs are comparable with those of existing mills, the competitive position and ultimate profitability of a proposed frontier-area manufacturing facility will be determined in large part by freight costs, since the manufacturer generally absorbs all of the freight costs and offers his product at landed-contract prices. In the case of a pulp mill serving the Chicago area from northern Manitoba, for example, total direct freight costs represent about one-fourth of annual sales, with outbound transportation charges on finished product accounting for more than half of these costs.

At the present time there is no economic alternative to the shipment of forest products by rail from northern Manitoba. Unfortunately, however, the inequities of Canada's railway freight structure are posing perhaps the most serious obstacle to the development of northern resources. In the words of the MacPherson Royal Commission on Transportation:

These inequities are principally a result of the fact that the railways' competitive position relative to other carriers has declined and, as a consequence, they have been forced to obtain a greater relative share of the revenues they require from the traffic which is least affected by competition. And, since the position of the railways *vis-à-vis* their competitors seems to continue to decline with each passing year, the degree of inequity experienced by the traffic still tied to the rails continues to grow with each general increase in freight rates which the railways are permitted to apply.<sup>2</sup>

Remedies for overcoming these disadvantages can only be devised at the national level; presumably they will be incorporated in the transportation policy under formulation by the Royal Commission. In the

<sup>2</sup> Volume I, March 1961, pp. 27-28.



meantime, however, the cost disadvantages which remoteness and the lack of competitive means of transport impose upon the northern frontier areas must be alleviated to some extent by the incentives a province is able to offer prospective investors.

A detailed discussion of these incentives and of their "cost" to the public is beyond the scope of this paper, but some remarks concerning a government's negotiating position may be in order. In general, we advocate a program whereby the government would receive somewhat smaller revenues and grant somewhat larger timber reserves than would be appropriate in less remote forest areas in recognition of the special problems of northern development. This recommendation does not envisage either the payment of a subsidy or the granting of terms which would seriously limit the development of a region's natural resources by other parties. The objective is, of course, to secure development and revenues that might not otherwise be forthcoming.

It is necessary to point out to those who may criticize a government for adopting a so-called "give-away" policy that opportunities not taken up in the near future may be permanently lost. Developments such as those listed below could make frontier area forests much less competitive in world markets than they are today:

1. Newsprint and other pulps made from alternative raw materials now constitute 4 to 5 per cent of world supply; this trend is continuing.
2. Technological improvements are leading to the use of species which were formerly bypassed. For example, 25 years ago a high-grade pulp could not be made from southern pine; today, southern newsprint is considered to be of standard grade. In addition, hardwood species have become a raw material for pulp mills as a result of recent process innovations.
3. Many of the emerging nations are striving for self-sufficiency in pulp and paper production based on the utilization of domestic raw materials.

The shadow cast by these and related developments constitutes a powerful argument in favor of early incentive program negotiations, because once the heavy investment in plant and equipment has been made, a forest products industry will continue to operate in the frontier area even though new investment opportunities may beckon elsewhere.

The point to bear in mind is that any program designed to encourage resource development must stand or fall as a "package." To compute its cost in terms of loss of potential revenue to the government is an idle exercise since there is little likelihood at present that two or more forest products firms would compete for the same development area. In the final analysis, then the effectiveness of an incentive pro-

gram will be judged by the kind and the rate of economic growth which it has made possible in a northern frontier area.

*Use of timber resources.* The cost and availability of a wood supply is the primary locational factor in the forest products industry. Hence, any agreement between government and investor depends on the designation of a specified cutting area and the determination of acceptable stumpage rates. For the operator, the stumpage rate may account for only 1 per cent of estimated production costs; thus, the effectiveness of this incentive should not be overrated by government negotiators. For the government, revenues from stumpage fees constitute the largest direct benefit of a northern timber operation. In most instances, these revenues are applied against the cost of fire protection which the government must bear whether or not the forests of the frontier areas are put to productive use.

By continuing to bear this cost, the government is in a position to offer the investor an additional incentive which, to him, represents the saving of a somewhat indeterminate out-of-pocket expense. To the government, the incremental cost of providing fire protection is not severe since much of the capital cost would have to be incurred regardless of the pulp mill's existence.

In setting stumpage rates, the government should also strive to cover the cost of such activities as forest management, research, administration and—if possible—the retraining of the local native population.

*Power costs.* These are a significant cost item to the investor. An increase of one mill adds about \$1 to the cost of each ton of pulp produced. In areas where power rates are under direct government control, they can be included in the incentive program. As in the case of stumpage fees, the rate should be set at a level that will cover the costs which the government wishes to assign to the projected operation—at least the direct cost of supplying the power to the mill and some portion of depreciation and debt service. This will vary according to whether a power plant has been built for the specific purpose of opening up a frontier area and whether alternative uses for the power exist at the time of negotiation.

*Product diversification.* The establishment of a pulp mill would facilitate the growth of secondary forest-using industries by providing raw materials—both logs and waste—at a lower cost. The government should therefore negotiate a timetable for diversification which would give the operator an adequate period to launch his primary enterprise, while ensuring the eventual development of secondary operations aimed at a more efficient use of the forest resource and the creation of additional em-

ployment and revenues under the incentive program.

*Townsite development.* Where a new townsite is required to support a forest products industry, the government should be responsible for planning it. Although resource development companies are experienced in townsite development, they are not in the business of building municipal facilities and may not possess the skills to ensure the construction of a well-conceived permanent community. Furthermore, these companies appreciate the opportunity to concentrate their efforts on the main problem of getting a mill underway. The formula for sharing the cost of these planning services should form part of the negotiating "package."

*Financial incentives.* Financial incentives offered in the field of townsite development constitute an important attraction to resource developers. For all but the largest enterprise, the cost of such development is a significant percentage of total investment requirements which would have to be charged against future production costs. Thus, for every million dollars invested in municipal services or improvements, about 66 cents would be added to the cost of one ton of pulp. With the total capital needs in a modern frontier town estimated at \$5 million or more, the competitive position of a northern pulp mill would probably be seriously impaired if financing had to be provided by the investor.

As a minimum, therefore, we suggest that government be prepared to guarantee the repayment of funds used for community development. In this way, the investor is assured a premium interest rate since the pledge of government credit stands behind the repayment of bonds sold for this purpose. As a maximum incentive, the government may wish to make outright grants, possibly in the form of land grants for all urban uses, excepting the mill area. The community can then in turn sell the land to developers, individuals, and to the company itself if it wishes to engage in other operations. Land before development occurs is cheap; it increases in value as the community grows. By granting such land to the municipality, a source of funds is provided which costs the senior government very little. This method of financing has been used in several resource development areas, and substantial revenues have accrued to the new communities from arrangements of this type.

The principal reason for granting such financial incentives is that the negotiations involve the development of a *renewable* resource. The community which grows up around such a resource can expect much greater permanence than the community arising from the development of a non-renewable resource. It holds out a much better prospect of being a focus for the long-term settlement of a frontier area.

## Conclusion

We hope that this brief review of some of the more important elements of an incentive program will stimulate a broader discussion of resource development alternatives facing the senior governments across the country.

Our contribution to this discussion may be summarized as follows: The northern frontier areas present special development problems which require special solutions. Their forest resources are extensive and potentially so valuable that ways must be found to transform them into *economic* resources, i.e. a development opportunity susceptible of attracting private capital. Neither government nor industry can expect to obtain a windfall profit from a frontier area operation. However, most entrepreneurs will carefully weigh the disadvantages of distance from markets and the difficulties of the environment against the assurance of a long-term supply of quality timber and the prospect of a more favorable cost structure than obtainable in the areas of permanent settlement. For government, the benefits to be reaped from an early development of what is now a wasting asset offer adequate justification for the negotiation of a realistic incentive program.

## Discussant (Mr. PUSHIE)

### (Summary)

Mr. Pushie, the first discussant, said development of resources in frontier regions required surveys, inventories and exploration first. It was a question of who should pay for these investigations—the federal government, a provincial government, or private enterprise either alone or in co-operation with government. The development of forest resources concerned making decisions as to whether it would be more economic to transport timber to a mill distant from the frontier or to establish the mill in the frontier region and stockpile its products for long periods of time.

Other questions of frontier resource development are: whether it is more efficient to expand existing mills than to build new ones based on frontier resources; the protection of renewable resources awaiting development; and some guarantee of return to private capital venturing into frontier regions. Mr. Pushie said private, federal, and provincial efforts should be co-ordinated to develop frontier resources.

## Discussant (Mr. ACHESON)

I agree with Mr. Stern's proposals. He is in effect outlining a case history which might apply to any forested area in Canada.

If it is possible to attract new investment to the point where an agreement can be negotiated, we

suggest that the development of such a resource is in the national interest as well as in the provincial interest and that both bodies should negotiate the best terms for realizing proportionate future benefits. It is suggested that the national body could arrange tax benefits for a stated development period. Mr. Stern suggests a change in dues structure by the province.

Instead of a reduction of dues, I would suggest that the province accept the responsibility for the building and maintaining of the main access roads from the forest area to the mill. If this is done a measure of diversification may be accomplished by the development of a tourist industry using the roads built and maintained by the province. Such action might also assist the fish, fur and wildlife.

Also it might be opportune to state that frontier areas may vary by provinces and that for the next 100 years some provinces might prefer to consolidate their position in fields already developed to produce better economic returns by more efficient management of the resource.

Such provinces would be willing to deal with new investment money but could offer better bargains in the better developed areas. But it could be argued that the nation would still be interested in seeing the frontier areas develop. Therefore, the national

body should, through the province, offer its own incentives in such cases.

Thus we can say each province has its own frontier areas and its development is both a national and provincial problem.

Diversification is possible and should be planned around the resource which is the main attraction.

The negotiations necessary to attract investment to a frontier region sometimes take many years to finalize. Each year the area is producing choice wood fibers. Therefore the area must be protected from fire and disease. Such protection therefore which is over and above a province's capabilities becomes a national responsibility. No province can budget for disaster and the last two years' fire losses have been disastrous even to the provinces with very efficient and very costly fire control organizations.

To avert such disasters, so that we keep our favorable position, help is needed. The assistance required is equipment, mostly airplanes. If National Defence could provide each frontier region or each province with a fire fighting air force trained in modern fire fighting techniques—future negotiations would be more attractive to the investor. Otherwise, if federal protection assistance is not forthcoming the attractive proportion of today may next year be very unattractive.

## DISCUSSION

The following assumptions were presented as a framework for discussion:

1. The development of frontier regions tends to depend on the development of a few resources and to be characterized by low incomes for those who continue with the traditional economic activities such as fishing, hunting and trapping.

2. The relative cost of investment in transportation and community facilities is high compared to other regions.

3. Isolation and special climatic conditions pose both social and psychological adaptation problems for the new population.

4. New and rapid economic development poses difficult problems of adjustment for the indigenous populations. (While it is desirable to have resource development projects operate to the benefit of indigenous populations, for Workshop B it was assumed that programs to integrate such populations will be implemented within the framework of economic resource development projects.)

5. Development of renewable resources in frontier regions requires:

- (a) Inventory of resources;

- (b) Assessment of their potential for development;

- (c) Assessment of impediments to development;

- (d) Evaluation of methods to overcome the impediments.

6. The distinctive problems of frontier regions require special government policies and administrative arrangements to meet them.

The Workshop then divided into three groups, each to base its discussion on a number of basic principles:

1. Frontier regions need to be developed.

2. The resources are (a) forestry, mining, (b) fish and wildlife, (c) recreation, (d) water, (e) agriculture.

3. Significant problems of developing frontier regions are:

- (a) Climatic conditions;

- (b) Psychological adaption;

- (c) Transportation (water, railroad, highways, air);

- (d) Adaptation of technology to northern development;

- (e) Overhead cost.



4. Factors in meeting problems are:
  - (a) Transportation; (b) modern social amenities; (c) research; (d) governmental incentives.
5. Diversification of its economic base.
6. Federal-provincial responsibility.

#### Workshop B1

The first group, Workshop B1, agreed frontier development is desirable if it is done in an *orderly manner* on a *sound economic* basis.

To have development, frontier regions must first be delineated and the necessary basic information compiled about them. After this has been carried out, consideration can be given to development, but this should be done in the light of world market conditions, existing production facilities, and cost-benefit analysis. Words of caution were expressed that shortsighted exploitation should not be permitted and also that since the introduction of people into frontier regions will result in insect and fire hazards, these areas should be reserved for the benefit of future generations until they are required. The observation was made that, having moved through a stage of exploitation, followed by conservation, we are now in a period of rational resource development based on proper management. In undertaking the planning and development of a frontier region, it was agreed that consideration be given to the need for recreation, fish, game and parks. The establishment of wilderness areas was suggested as a means of showing the original state of frontier regions.

In discussing the resources for development, it was suggested that consideration be given to the human resources. For each area, only one or a few resources exist and the potentials will vary greatly. The need for an inventory of the resources potential of a region as the first step toward development was reiterated.

The problems of developing frontier regions were basically three: climatic, geographic and human. These lead to special problems in the field of technology, economics (added costs) and human adaptation. The technological and economic problems involved transportation, communication, labor, inventories, capital, permafrost and townsites.

The program required to overcome the problems involved:

1. Research;
  - (a) Basic knowledge about the resources;
  - (b) Planning;
  - (c) Applied research.
2. Government role: policies, programs and incentives.

3. Modern social amenities.

4. Transportation.

Major emphasis was given to the need for basic knowledge as a prime requisite to understand and evaluate the problem and to the need for major technical or economic breakthrough in transportation. Resource inventories should be undertaken on a multiple resource basis as an integrated project. Also, since most of the information needed is of a long-term nature, such as climatological, a program should be undertaken immediately.

The view was expressed that frontier regions do not get the attention which they deserve since their representation is small relative to their geographic size. To bring about political action, the general public must be informed about the need for research on, and development of, our frontier regions. Public information should stress the benefits which will accrue to the public.

Emphasis was given to the multiple resource concept in research investigation and development wherever possible. However, it was realized that the most probable pattern of development is one of a single resource use first, followed by multiple use aims in secondary planning and development. Investigation of specific projects must similarly be primarily single purpose.

The objectives of frontier development were concluded to be job opportunities to facilitate a better standard of living for more people, a contribution to general economic development, and the stimulation of the economy by productive effort.

It was generally agreed that the federal and provincial governments, universities, private companies and research agencies would all carry out research and that the senior levels of government have major responsibilities in this field.

In a previous workshop, a National Renewable Resource Council had been proposed and it was suggested that this agency could be made responsible for research in this field, particularly in a co-ordinating capacity. To be effective, this agency should be representative of the federal and provincial governments, commercial interests, universities and associations; it should be sufficiently independent to freely advise all groups in the interests of sound renewable resource utilization and it should not duplicate the function of the existing agencies. The "Resources for the Future" organization was suggested as a model, as were the Canada Council and the proposed Agricultural Economic Policy Council.

In the realm of applied research, the need for forest management knowledge was pointed out and "pilot plant" operations were suggested.

There was general agreement as to joint federal-provincial interest, in view of mutual benefits from

development. A federal program of taxation and transportation incentives was suggested. Because both the federal and provincial governments are making expenditures on frontier areas with little or no return, development should be encouraged to reduce the net cost. In many frontier areas consideration should be given to abandoning marginal lands in favor of consolidation of people on resources capable of supporting them. This is a practical undertaking which justifies much of the basic research proposed.

#### *Workshop B2*

Discussion in Workshop B2 on the development of frontier regions revealed two broad areas of conflicting opinion.

Some individuals expressed apprehension about forced, or too rapid, development of frontier areas. These apprehensions were based partly on the historical experience that northern frontier development in the past had often had the effect of despoiling potentially valuable resource endowments, particularly those affecting the basic soil and water complex. The apprehensions were based also on the view that we do not know enough about many of our frontier areas to develop them and to take proper precautions to protect the basic soil and water properties. Development should not precede, but should follow, the mapping, research and technical surveys that are necessary to permit the development of frontier areas in an integrated way. The emphasis should not be primarily on the exploitation of a single resource but also on the preservation and protection of interdependent natural endowments.

Others considered the more rapid development of frontier resources an important objective. While not denying many of the errors of past development, they nevertheless felt that the course of northern settlement need not be destructive. And while not denying the great importance of more knowledge about frontier resources and their interdependence, this group believed that such knowledge is now being developed and will be developed more rapidly.

In the end the two broad viewpoints emerged as differences in emphasis rather than conflicts in ideas, and the Workshop was agreed on the following broad proposition:

Effective development of frontier regions requires detailed knowledge of resources, conditions, and techniques; without careful planning based on adequate knowledge, frontier areas will be unable to realize their full potential. The group therefore recommends increased effort in technical surveys in frontier regions and in northern research.

In the discussion of the problems of developing frontier regions, a number of obstacles to more rapid growth were cited. Chief among these were the inad-

equat provision and high cost of transportation and low standards of cultural, educational, and physical community amenities. In addition the general unattractiveness of northern life to women was mentioned as a factor that would make many men reluctant to live in the north.

Of the resources themselves, which must provide the main basis for providing a source of income in frontier areas, forestry, mining, recreation and tourism hold the greatest potential. Fish and wildlife resources are often potentially lower in frontier regions on a sustained yield basis than in some other parts of Canada. In total however, these resources when harvested from wide areas have the capacity to generate a significant contribution to the recreational and economic base.

While economic activity of one kind or another has been and will continue to be of great importance as a justification for frontier area development, broad public purposes of a military or administrative kind may also serve as the basis of development.

Whatever the purpose to be served by growth in such areas, development will have to be supported by special public assistance to accelerate research and to provide economic aids in the form of subsidies, tax concessions or guarantees to help overcome the problems of high overhead costs, particularly transport costs, and primitive standards of social amenity.

At the conclusion of the meeting the groups agreed on the following statement:

Frontier development will depend to a considerable extent on the cost of services and the availability of local labor. The group therefore recommends that, in examining the possibilities of establishing new activities in frontier regions, consideration should be given in the first place to those localities in which there is already some established development in order to achieve a more economic use of services, and a more flexible labor supply.

#### *Workshop B3*

Workshop B3 felt that emphasis in the assumptions should be on the purposeful development of frontier regions for not only indigenous peoples but for the national good, and that additional people are necessary. There is a need for such regions to be developed under proper planning and management.

The discussions of the various resources available to the underdeveloped regions brought out the following conclusions and recommendations:

1. In any development plan "package," proper management is an essential ingredient. Major consideration should be given to management of other

resources (e.g. expensive needs such as pollution control) and to social problems.

2. The biological productivity of regions should be considered as a base for social and economic development. Consideration should be given now to the collection and interpretation of basic data, including both existing information and newly-collected information.

3. It is recognized that in a one-resource development there is a shift in the other resource values and thus the economic base becomes broader (as in recreational use).

4. There should be exploration of the possibility of local resources as a basis of development without injecting a large amount of outside capital, and of the advantages of using local skills and reducing social aid costs. Social responsibility toward northern people should be recognized by government, industry, labor and all other agencies.

5. Aesthetic values should not be surrendered entirely to overriding economic considerations in the development of new areas. There is a need for parks, nature preserves and wilderness areas to be set aside in frontier areas.

6. Renewable resources which are easy to develop in frontier regions need special considerations by protection and conservation measures.

7. The easy disposal of industrial wastes should

not be an inducement to attract industry to frontier areas.

8. The transmission of hydroelectric power is a major problem but economic thousand-mile transmission is in view. There is a need for more concentrated study of moving power to load centers and grid systems.

9. Field husbandry will be of some importance in certain areas, especially culture of vegetables. Animal husbandry, neglected in the past, should explore native species as possibilities for domestication. A number of people felt that such animals have small potential in this respect.

10. Basic meteorologic and hydrologic data are fundamental, and their collection should be intensified.

11. It is recommended that the Roads to Resources program be continued with attention to multiple use possibilities.

12. The proposal that a central committee be established to co-ordinate and carry out research and development is endorsed.

13. It is recommended that an inventory of resources be a responsibility of a suitable council.

14. Federal help is urgent in large-area surveys and in assessment of the potential of frontier regions.





*Concurrent Sessions*

*Friday, October 27, 1961*





# *Capital Requirements for Resource Development*

FRIDAY, October 27

Chairman: DOUGLAS GIBSON, General Manager, Bank of Nova Scotia, Toronto.

Speaker: M. W. MACKENZIE, President, Chemcell Limited, Toronto.

Panel: RENÉ TREMBLAY, Deputy Minister, Quebec Department of Trade and Commerce.

JOHN DAVIS, Director of Research and Planning, British Columbia Electric Company Ltd.

G. F. PUSHIE, Director-General, Newfoundland Department of Economic Development.

D. H. F. BLACK, Deputy Minister, Saskatchewan Department of Industry and Information.

## **Chairman (Mr. GIBSON)**

The subject for discussion is extremely broad, covering requirements for resource development and the creation of a climate favorable to investment and renewable resources.

We are looking in this session at the capital needs of resource development; what is required in terms of capital and in terms of organization to induce a satisfactory level of investment in the resource industries, both in their initial development and in their extension of the scale of processing. This is obviously a very important and quite topical subject.

I think that all of us here recognize how much we depend on export markets in most of our resource industries, and particularly some of the big ones. This is a fundamental characteristic of many of them, and this dependence does impose some real limitations on the practical range of Canadian policies. I take it we shall be concerned with questions of the adequacy of existing sources of finance both domestic and external.

Do our institutions provide reasonable funds, i.e., reasonable in our circumstances, for capital resource development? How can we improve them? What about our dependence on external sources of capital?

Is it excessive, as is sometimes suggested? Can we generalize about it? What about equality of factors? How much does foreign investment mean in tying us to markets and obtaining know-how? What is the present climate with regard to external capital? Do foreigners think we are as good as we know we are? Is there anything more to be done to encourage Canadian ownership of resources? If so, if we limit foreign participation, how much are we prepared to slow our own resource development? If we want to encourage Canadian ownership more, how do we do this in a practical way? What measures of co-operation are feasible between the provinces, who have the primary right with regard to resources, and the federal government, which has very important powers over taxation and money? Are our resources as valuable as we have been accustomed to thinking they are? Or is there anything in the new theory of economics which says you can make anything out of anything, it is just a question of costs, and these costs of making one thing into another are steadily declining in an advancing technology?

There are all sorts of questions in this area, and I don't suggest we should confine ourselves to any particular ones, but I throw out these as a possible framework for discussion.

**Speaker (Mr. MACKENZIE)**

The title that I was given for this talk could be interpreted in a number of ways. It may therefore be as well to begin by making it clear that I am not attempting to offer any sort of blueprint for capital requirements in resource development. Any such projections have to depend on highly uncertain assumptions about our own growth, about world trade, and many other factors. They are interesting exercises in possibilities rather than meaningful estimates of probabilities. I therefore shall not try to discuss even the scale of the investment decisions we may be required to make in the years ahead.

But it is, I think, useful to consider what attitudes and policies toward resource development are most likely to lead us to make the right investment decisions, in whatever conditions we face. The subject is broad enough that I approach it with trepidation and a lively sense of inadequacy to the task.

There are a number of obstacles to realistic discussion. One of the most important, I think, is the tendency to take too specialized a view. This affects us whether our primary interest is in resource development or in financing as such. We may be tempted to start too soon talking about the rules regarding conservation, about taxation, about the incentives for investment and especially for risk-taking, about price-supports on farm products, and so on. All of these are important. They play a large part in determining our capital requirements and the rate of development of our resources. There are, however, some more fundamental factors which control the environment in which these other influences operate. The fundamental factors, as I see them are, first, the demand for the products of our resources, and second, the necessary technology in utilizing the resources.

Canada is rich in natural resources, of both the renewable and the non-renewable kinds. This is one of the commonest points on which we are congratulated by politicians and after-dinner speakers. We have no difficulty in agreeing that resources are a Good Thing. But what exactly do we mean when we talk about richness of resources? We're not really making a statement about the number of trees in Canada, or the acreage of our farmland, or the barrels of oil under our ground, or the millions of horsepower of energy in our rivers. Those physical facts have been much the same for centuries. They affect the way we live only to the extent to which there's a demand for the products of these resources—for lumber and pulp and paper from our forests, for grains from our Prairies, for electric power from our rivers.

Demand in this sense is not an abstraction. It means demand in a quality and at a price such that

our resources can be economically developed to meet the demand. And this in turn implies certain technological conditions. Trees and rivers and the rest are of little use to us unless we have the knowledge and skills to put them to work to serve purposes people want them for at prices people are prepared to pay.

There is another factor. Canada is a small country, in population. The demands of eighteen million people will not, in many cases, make large-scale resource development economic. Using our rich resources therefore means satisfying economically a demand that originates outside our own borders. To take the most obvious historic example: the soil of Saskatchewan would have been of relatively little use as a natural resource if a number of countries, and the United Kingdom especially, hadn't wanted more wheat than it was economic for them to grow themselves. And there were other necessary conditions, besides the suitability of the western plains for grain-growing. We wouldn't have utilized this resource if agricultural science hadn't developed wheat strains suitable for a short growth period; if the Great Lakes hadn't provided cheap bulk transport far into the continent; and if we hadn't built our western railways.

Let me digress for a moment to say that the building of the railways was Canada's first experience on a major scale of the problems involved in putting large amounts of capital in specific investments ancillary to resource development. To remember that experience ought to safeguard us against dogmatism about the right techniques for investment. The railways were built thanks to a variety of expedients, some highly unconventional, involving a mixture of public and private initiative and imagination. The process had its weaknesses and extravagances, from some of which we've suffered ever since. But they don't alter the fundamental fact that Canadian development would have been slower, and indeed might never have been *national* development at all, if we hadn't built a lot of railways when we did. And we only got them because there was an adventurous willingness to take risks and close co-operation of government and private activity.

The lesson, I suggest, is that we shouldn't approach the financing of resource development with closed minds. We will remain firm, I hope, in the view that the sort of life Canadians want to lead, the values we want to implement in our society, will be best served if economic decisions are largely decentralized in individual enterprises, rather than concentrated in a central government. But it doesn't follow from that generalization that we will do the best job of resource development by adhering rigidly to slogans about keeping government out of business, reducing the

burden of taxes, and so on. Some of the attitudes that inspire those slogans have great merit. But our Canadian problems are a bit too complicated for any slogans to provide all the answers we need.

Returning now to my main argument, I say that demand for the final products of our resources is the basic determinant of the investment climate, and that the demand must be in large measure foreign demand. For a country of our population, those are simply the two sides of one coin: to be as rich in resources as we are is significant only if it leads to international trade. That is an obvious truth; so obvious, I'm afraid, that it gets taken for granted and then quietly forgotten in a great deal of economic and financial discussion.

Again, however, we are unwise if we draw from this truth any simple, doctrinaire conclusion about the policies we ought to follow. There are people who rush to say that we should be free-traders. Undoubtedly a situation in which trade was conducted freely throughout the world would provide Canada with the maximum opportunity to utilize her resources. It follows that our influence, for what it is worth, should be set toward encouraging other countries to trade freely. And we could not expect to achieve much in that direction if our own commercial policies were conspicuously and highly protectionist. With all respect to the various proponents of a highly protectionist policy for Canada, and to the sincere nationalism that motivates some of them, any such extreme policy would seem to me cause to despair of our national sanity. I suggest that, whatever the state of tariff policies among the major countries, Canada cannot afford to be over to the protectionist side of the spectrum. At most, we should be a middle-tariff country.

But, our influence is limited. The world is going to continue to fall far short of the ideal of free trade. And the rule of not-more-than-middle-protectionism therefore leaves a wide range of decision as to precisely what tariff policies will suit us best. There are some strong arguments for the view that, in relation to a given state of protectionism in other countries, Canada's best interests would be served by rather higher tariffs, on some types of goods, than we have had in the past. The genuinely difficult problem in Canadian trade policy is a problem of balance. We have the strongest interest in encouraging a large volume of world trade. On the other hand, in a world in which a considerable degree of protectionism is likely to survive our best efforts at international co-operation, we also have a strong interest in encouraging industries which we need, if we are to have full employment and economic growth, but which have only limited markets available to them.

Our interest in world trade has a very close implication for one of the most important controversies that has occupied us in Canada in recent years. That is our attitude to foreign capital. In this controversy, we have often failed to distinguish properly between two very different cases: between investment in primary and secondary industries.

It is easy to list ways in which a large measure of foreign ownership and control of Canadian secondary industries *may* have disadvantages for our national economic life. Such industries exist primarily to service our domestic market. There is nothing unusual about that. Except for a few highly specialized products, very few manufacturing industries anywhere are nowadays established mainly for the sake of export. World trade in manufactures is conducted largely from plants which are located because of a good basis of demand at home, and then succeed in adding export business. In our cases, there is an obvious danger that some foreign corporations will not be much interested in adding such business to their Canadian plants; it may be more profitable to them to concentrate exports in their domestic plants.

Then, to take an example of a different kind, companies selling in the domestic market but looking for finance to a foreign parent company may be immune to national monetary and credit policies, with results that can weaken the effectiveness of measures designed to maintain stability in the Canadian economy.

Those are two examples of the disadvantages that can be claimed against foreign capital in Canadian industry. Allow me to emphasize that they, and other disadvantages which are alleged, are not in my view decisive. Far from it. I do not think that they compare at all, in practical effect, with the great advantages that Canadians have reaped from the willingness of foreigners to invest here. However, many people disagree with me and I am certainly not prepared to insist that there is no small fire at all associated with all the smoke that foreign ownership has provoked among us in recent years. My hope is that, now there has been time for some of the smoke to clear, agreement on one point can be reached among reasonable Canadians. The alleged disadvantages of foreign control apply to industries whose products are used mostly by Canadians. Whether we regard them as very serious or not, we surely should be clear what they are. And in that case we will, I believe, recognize that they apply to operations for the domestic market and do not apply to operations that are designed to serve primarily external markets.

Those are the markets of the major resource industries requiring large investments. For example,



there is no possibility of utilizing our forest resources fully in order to serve the Canadian domestic market with lumber, paper, newsprint and cellulosic fibers. The prosperity of our forest industry depends on the foreign demand for these things. That is to say, it depends on conditions outside Canada, whatever the ownership of firms in the industry. Whatever we do, the level of investment in our forest resources will be determined chiefly outside Canada, by demand in other countries. Whether boards of directors are Canadian or British or American or Japanese, they will be trying to make precisely the same decisions, based on estimates of future world-wide demand, prices and costs. In these circumstances, there is no apparent reason why, as good Canadians, we should care whether the capital invested in our forest industry is domestic or foreign. Indeed, to the extent that large foreign investments are made in the equity of resource development projects, it would seem to be one of the best ways of underwriting demand for the products.

This does not mean that we should hand over our forests to foreigners. There are fundamental public interests that should not be handed to any private group, whatever its citizenship. It is the right and the duty of governments to lay down the terms and conditions on which our resources are utilized. Our forest assets must be conserved, by government insistence on sustained yield logging, whether the partnership involved is between government and Canadian capital or government and foreign capital. Again, it is a question of public policy to see that a full economic price is paid for logging rights, or as royalties in the case of minerals, whatever the nationality of the capital involved.

These and other fundamental decisions in resource development are matters fully within the public domain. They require wise government policies. If we do not have such policies, we will get into trouble wherever the capital for development comes from. If we do have wise policies in the matters of public responsibility, we do not need to worry where the capital comes from. It must be subject to the law of this land, equally whether it is Canadian or foreign capital. But if it is so subject, its nationality does not matter to the public interest and it should get equal treatment irrespective of nationality.

I mean precisely that. I do not mean that we should allow foreign capital any advantages or special favors, compared with our own capital. The need is for genuine equality of treatment. It is the world demand for the products of our resources that will, in any event, determine the economics of our resource development. We will get the capital required for the maximum economic development provided that

we treat foreign capital on the same terms as Canadian capital.

Many people, of course, will say that this viewpoint involves a terrible error. It assumes that we have to be mere hewers of wood and drawers of water—the emotional description, I gather, for people who earn their livings in the resource industries. These critics, or some of them at any rate, are prepared to agree that the ownership of capital doesn't matter, if what it is engaged in is simply primary production for export markets. But the proviso, they would say, is the real issue. Foreign capital is only interested in raw material fodder for foreign industries, whereas our national interest is in processing these materials into more finished products of our own industries.

I do not think that in fact the problem of processing has any significant bearing on the issue of Canadian versus foreign capital. What we can export will be determined, in any event, by economic demand and government policies outside our own border. In so far as we can sensibly modify the situation by government regulations of our own, those apply equally whatever the nationality of the capital operating in Canada. And within that framework, the nationality makes no difference.

No one doubts that we would be better off if, say, we could process all our wheat into flour, at remunerative prices, before exporting. But thinking of ways in which one would like to be better off is rarely a rewarding pastime. The trouble, for individuals and corporations and countries, is that it is liable to be day-dreaming rather than policy-making. The fact of life is that all the wheat it is economic for us to grow cannot be exported as flour. If we insisted on processing it ourselves, a great deal of the grain we now grow just would no longer be grown.

When people talk about further processing, they sometimes relate it to the case for more protection. It should be pointed out that the reason why our forest industries export pulp, a partially processed product, rather than paper, is largely the tariff policy of our foreign customers. They will import pulp and grain without tariffs; paper and flour they protect. The same is true for many mineral products: steel faces tariffs where iron ore does not.

The principal tariff changes that would help us to do more processing in Canada are, therefore, reductions in other countries' tariffs on finished and semi-finished products, not increases in our own tariffs. The desire for more processing is a desire for freer trade. It is not, therefore, likely to be fulfilled in a hurry. The practical question is how we can do as much processing as possible in the world as it is. Since other countries use the power of government to favor their own processing, we are certainly en-

titled to do so where we can. The best-known example of such action is Ontario's prohibition of the export of logs. This has probably resulted in some pulp being made in Ontario when the mills might otherwise have been located on the American side of the Great Lakes system. That, however, is a very special case, where the cost differences between location on either side of the border would have been very slight.

In general, the scope for government intervention to secure processing here is pretty small. We are sellers, not buyers, and people will either buy our resource products in the form they want them or they will get the same products elsewhere. This is a fact that is too often forgotten. There are a lot of resources outside Canada. There is, therefore, no merit whatever in adopting a dog-in-the-manger attitude toward our resources, especially our renewable resources. If we do not use them when the demand exists, technological progress may well remove the demand in future. The only way to utilize our resources fully is to develop them for export, with the amount of processing that is economic in the world as it is. Where we can increase the processing, by all means let us do so. But where we can't, let us not hesitate to sell what other countries want and are willing to pay for.

I cannot leave this subject without a brief reference to the particular problem involved in exporting one of our renewable resources: hydroelectric power. This is the one case in which it has hitherto been national policy to be dogs-in-the-manger. We have refused to export power to the United States even where we had surpluses to develop and American communities within economic reach would have been very glad to buy our power.

There have been, I think, good reasons for that policy. But we should be clear precisely what they were. They arose from the fact that power has not had a national, or international, market like most commodities. The economic distances for power transmission were strictly limited. And, in the areas where it was available, the difference in cost between our hydro power and any alternative source of energy was very great indeed.

The effect of these conditions was that, once we began to supply power to an industry or community south of the border, we were morally bound to continue. We could not cut them off even if, later, we began to need the power ourselves. To export was, therefore, to commit to foreign consumption part of the low-cost electric power that has been one of the very greatest of Canada's economic advantages for industry.

In such circumstances, the no-export policy for power was right. Eight years ago, in a paper which

discussed the subject, I argued that we should not at that time change the policy. But I suggested that circumstances might change, particularly when we had achieved "greater development and flexibility on a nation-wide basis in the availability of our presently usable energy sources."

That condition is now well on the road to fulfillment. The economic distances over which electric power can be transmitted are increasing rapidly. With the linking of many of our provincial hydro systems, we have taken long steps toward a national power grid. We have built some important gas pipelines and have begun to export gas, a non-renewable source of energy. We are doing that to meet a rising U.S. demand whose most buoyant element, incidentally, arises from the increasing use of natural gas for the thermal generation of electric power. This interconnection of energy sources will go a long stage farther as nuclear energy becomes an economic means of generating power.

In these rapidly changing technological conditions, sources of energy are becoming flexible. Power is becoming much more like a commodity which can be sold here or sold there, according to demand. Alternatives are available at diminishing differences in cost. Market conditions, in short, are taking over. The reasons for treating power differently from our other resources are therefore diminishing. At the same time, the comparative advantage of having large sources of hydro power will probably shrink. If we leave these resources undeveloped for too long, we may easily find that when we do come to develop them the power they provide is not so very much cheaper than the power other people can get from other sources. To delay development because we are not yet ready to use the power ourselves, and don't want to commit it to other people, may well be a course of declining wisdom.

I must urge you not to interpret these remarks as a proposal that we should suddenly stand on our heads, reverse our policies overnight, and start trying to sell power for all we are worth. Far from it. I am suggesting simply that science moves on, times change, what was best yesterday is not necessarily best today and may be foolish tomorrow, and therefore we should be seriously reconsidering our policy on power exports in the light of the technological and economic changes that are taking place now and that seem probable during the next decade.

This brings me to another area in which we need to be alert to match our attitudes to today's conditions, not yesterday's. Conflicts of interest between primary and secondary producers and particularly between Prairie farmers and the protected industries of Central Canada—have formed a main strand in Canadian economic and political history. Many of us

are in consequence prone to think that in some sense one interest must win over the other, and that we have to choose between prosperity for primary or for secondary industry. In fact, there is no such simple choice. This conflict of interest, like so many others, can only be resolved by compromises. It can't be eliminated by clear-cut choices.

In fact, much of the basis for the conflict has disappeared because the resource industries are now so far from being what is implied in the phrase "hewing wood and drawing water." Remarkably few people seem to be aware that in agriculture, productivity output per man hour—has risen considerably more, over the last two decades or so, than it has in a great many industries. There are still, of course, many poor farms on which people hew wood, some on which they draw water. There are also, one may say, some very inefficient industrial plants. In our cities and towns there are still service trades of many kinds in which people expend an enormous physical effort for rather meager rewards, and in far less healthy conditions than the hewer of wood.

In other words there are, in many kinds of activity, blank areas where technology has not yet done much to make earning a living physically easy. But in our main resource industries, the application of power to replace human muscle has gone a very long way. This is true in a great deal of our farming. It is certainly true in the forest industry, where modern power equipment has invoked at least as great a transformation as it has in construction work. This applies equally to our non-renewable resources, such as mining. And it is perhaps most apparent of all in the field of energy, whether oil or gas or hydro-power.

The resource industries today are technically complex and technologically advanced. For the manpower involved, they are sophisticated ways of earning a good living. In Canada, certainly, they are the way in which many of us can earn the best possible living.

Modern technology, however, changes a great many things beside the amount of muscular energy we have to use. It also reduces the importance, to us as a nation, of a rich endowment of physical resources. We are rich in resources. But other countries have resources too. And everywhere people are getting better at using what they have. Our resources are little use to us unless their products are competitive. And being competitive now means being advanced in technology.

This is the point that, I fear, is often too little understood by some of the most fervent champions of our resource industries. A country will not be advanced in technology if it is very highly specialized in primary production. Or at least, it won't stay

advanced, and its primary production won't remain competitive indefinitely. In other words, the technological progress of the resource industries means that they need vigorous and successful secondary industries beside them. They need chemicals, they need first-class engineering. They need scientific men of all kinds. They need a lively atmosphere of research. They need industrialists looking for every possible way of up-grading our products, putting together materials in new ways, developing new end uses and finding new markets. If we want to get right down to the fundamentals, the most important resource of all is men's knowledge; and the knowledge required for the full utilization of our physical resources today is so broad and complex that it can be available only within a broadly based industrial structure.

I do not mean, of course, that we in Canada have to have a self-sufficient economy, or even that we must be trying to do a little bit of everything for ourselves. That would be ridiculous for our size; it would make our costs too high for even our resource industries to be competitive. What is best for us is, once again, a matter of degree. We don't have to do everything for ourselves. Knowledge fortunately flows across national boundaries. But we can't apply outside knowledge, promptly and skilfully, to the particular problems of the resource industries, unless we have a pretty wide variety of knowledge, experience and skill generated at home.

In short, Canada needs a broadly based industrial structure. We need it not only for the sake of full employment with a quickly growing population. We also need it in order to have permanently successful resource industries. A climate favorable to investment in the resource industries must be a climate of what I might call general industrial sprightliness, of technological advance and economic progressiveness on a broad front.

This, of course, has a bearing on the points about tariffs and trade that I made earlier. It is not an argument for sheltering either old industries or every hothouse growth behind highly protectionist barriers. But it certainly is, in the present state of the world, reason for us to make judicious and moderate use of tariffs. Bluntly, I would suggest to primary producers that they are not really talking in their own long-term interests when they strike the attitude that every tariff helps industry only at the expense of the farmer, the forester and the aluminum smelter.

The other side of the coin, which I would say more about if I were talking to industrialists, is that the destruction of Canada's foreign trade, which some of them talk as if they were set on, would ruin Canadian secondary industry only a little more



slowly than it would ruin primary producers. My point, in short, is that modern technology has increased the interdependence of economic activities in a way that ought to make it far easier for primary and secondary producers to see their common interests. We need a trade and tariff policy through which we give our full share of encouragement to world trade while ensuring that, in face of protectionism elsewhere, our own industrial growth is vigorous and reasonably diversified. We should be able to achieve this with far less conflict of doctrinaire attitudes, far wider agreement on the virtues of moderation and flexibility, than historical attitudes tend to produce.

On that happy note with the Ontario lion lying down with the Prairie lamb, I have come to the end of the ground that I set myself at the beginning of this talk. That is to say, I have said something about the various attitudes that, in my judgment, are most likely to lead us to the right investment decisions for renewable resources. Let me briefly summarize. I think we will have a climate favorable to investment if:

(1) We clearly recognize that the utilization of our resources depends on the demands for final products that arise, to a very large extent, outside our own borders.

(2) Accordingly we welcome foreign capital, at any rate as far as resource development is concerned, and treat it exactly as we treat Canadian capital.

(3) We do not shrink from fully asserting the public responsibility, which belongs to governments, for controlling in the national interest the terms on which resources are used and renewed. In particular, such public policies will include encouragement to processing in Canada in cases where it is economically feasible, but will not try to push processing at all costs.

(4) We should gradually take a more flexible attitude to the export of hydroelectric power.

(5) We must do our full share of encouraging world trade and cannot contemplate being a highly protectionist country.

(6) At the same time we need, in the world as it is, a moderate and judicious use of tariffs to ensure a measure of vigorous diversity in our industrial structure.

(7) In general, the efficiency and competitiveness of modern resource development depends on a generally favorable industrial climate; we need a vigorous economy, in which employment is high, research is active, and technology advances on a broad front.

If those general conditions are satisfied, I do not think that we have to worry too much about the

supply of capital for the healthy development of our resources. There will remain, of course, many detailed problems. We will have to continue to give vigilant attention to the legal conditions and the tax structure which will best encourage investment and conservation. That is especially true in the forest industries; the ways these matters are handled now are not ideal, but I think they are reasonably satisfactory.

In agriculture, there are far greater difficulties. We will continue to depend in large measure, for our agricultural efficiency and progress, on the family farm. Agriculture will continue to yield, however, individual incomes that are often less, and sometimes much less, than those of industrial workers. We cannot go on forever failing to provide for such farmers a degree of security comparable to that which is available to the industrial worker through unemployment insurance. But how do we do this without stimulating surplus production of crops for which the market is inelastic? No one, as far as I know, has yet found a satisfactory answer. Until we do, there will continue to be difficulties in the supply of farm capital and credit. But I do not pretend to have the answer.

Nor, I will admit as a conclusion, do I have any suggestions to make about the financial machinery that will be most helpful to resource development. That is not because I regard financial machinery as unimportant. But I do not think that the resource industries, and our renewable resources in particular, need any special machinery or, for that matter, special favors. They merely need to take their place, with other activities, in the competition for private and public funds that is always active in a healthy economy. If the climate is favorable, the mechanisms are not very difficult to devise, to operate and to adjust from time to time. The climate will be favorable if our national attitudes to resource development are sound, far-sighted and adaptable to a changing world.

#### Panelist (Mr. TREMBLAY)\*

I was quite interested, as you were yourselves, in Mr. Mackenzie's paper on the problems confronting Canada with regard to the development of natural resources. As I agree with the main points raised by Mr. Mackenzie, it is only in his conclusion that I have been able to find some points on which I did not agree. Therefore, I merely wish to initiate a discussion which, I believe, will be interesting. I wish to raise those points in Mr. Mackenzie's conclusion and make a few remarks relative to them.

Mr. Mackenzie states in his conclusion: "Nor, I

\* Translated from French.

will admit, as a conclusion, do I have any suggestions to make about the financial machinery that will be most helpful to resource development. That is not because I regard financial machinery as unimportant, but I do not think that the resource industries and our renewable resources in particular need any special machinery or for that matter special favors." He further adds: "If the climate is favorable, the mechanisms are not very difficult to devise, to operate and to adjust from time to time."

I believe that such a statement minimizes rather too much a major problem which has existed with regard to the development of our resources for quite a long time. I mean the lack of adaptation of our present financial institutions to the task of supplying the monies required for the development of our resources.

I believe that our dependence on American sources of financing has an important connection with this deficiency in our Canadian structure. For a long time, we have blamed Canadians for keeping aloof from industrial investments; they prefer investing in government stocks and public service undertakings. But did we consider whether our financial institutions as a whole, which are draining those Canadian savings, have adapted themselves to the needs of the industrial sectors of our economy? It seems to me that the time has come to make a concerted effort to look into our financial structures relative to our present and future needs, and to proceed with the revisions that are called for.

The Royal Commission, which has just been formed by the federal government to study our financial problems as a whole, comes at the right time. I trust there will be no hesitation in making the necessary recommendations, even if they appear to be radical in the field of our financial tradition in Canada. It is because the Quebec government is conscious of the urgency of the problem I have just raised that the Prime Minister of Quebec recently announced the establishment of a general financing society. It will have a double task to fulfill: first, that of channelling the savings which so far have been invested only reservedly in the industrial field and, second, that of assuring a more rapid and more diversified development of natural resources in the province of Quebec. We are building the greatest hopes on this initiative which, I believe, is unique in Canada and which will make it possible to fill a gap that has existed up to now.

But is the establishment of private, public, or semi-public institutions of industrial investment sufficient to meet the financial needs of Canada at the present time? I do not think so, as long as the group of our main financial institutions, that is to say the chartered banks, has not been granted increased

powers and is not prepared to assume further responsibilities. The experience of the United States and Europe should enlighten us in this connection.

The European type of business bank seems to me the essential machinery for the acceleration of industrial development in the present economic situation of Canada. Such financial institutions may be new ones, or they may be existing institutions which assume new responsibilities with regard to the sharing of risk in the development of our resources.

I am wondering whether it would not be advisable to give more latitude to our chartered banks to make risk, capital investments and to do long-term financing. Truly it would be a pity if our economic evolution should be delayed for reasons of excessive liquidity, which is no longer called for in an up-to-date bank structure where a central bank institution has great powers.

These are the few reflections which Mr. Mackenzie's excellent paper has inspired. I wanted to submit them to your attention and to your criticism, as an introduction to the present discussion.

#### Panelist (Mr. DAVIS)

I have often been introduced as an economist. This I sometimes regard as a backhanded compliment for two reasons. One is that engineers and administrators frequently make bad jokes about economists. The other is that far too many economists take refuge in broad generalizations and refuse to commit themselves where drastic action or real economies are concerned.

Unpalatable decisions often have to be made and adhered to. So let me make my own position quite clear. I believe that we cannot achieve a high rate of economic growth without making cuts here and there. The nation's health, like that of a family, or group of families, calls for a certain amount of surgery. Infusions of new capital will help us to carry on; but they are not, and cannot be, the answer in every case. Tighter budgets and better management techniques are what is needed and these, in turn, can modify our capital requirements for water resource development in Canada.

Everyone that I talk to seems to be convinced that Resources are a Good Thing. Many are also of the opinion that we must have more investment capital. Give us the tools, they seem to be saying, and we will finish the job. Often these man-made tools—though they demand their own wage—are very efficient. But I get the impression that we have now become so impressed by the machine that we welcome capital investment for capital investment's sake.

This doesn't mean that we must harness all of the renewable resources in sight. Some are exploitable

now. Others may have to wait; and still others may always be passed over in favor of better investment opportunities. We, in other words, must be selective in our approach. Often this will mean less employment, on the job, for the most valuable resource is the one whose development calls for the least amount of effort on our part. But it is good economics, for it frees more capital and more labor to serve other needs in the community.

Here, then, is my theme. The more a resource costs to develop, the more marginal it becomes. The higher its capital costs, the greater the likelihood of something else taking its place. We cannot go on pumping money into resource development projects without attracting some attention. And this attention may have some unfavorable results. The investment fraternity knows that there are other fields of endeavor where the outlays on new plant and equipment are less onerous and where the output per unit of capital is showing a much more rapid increase.

We in Canada are inclined to think of ourselves as proprietors of a vast storehouse of hydroelectric energy. Water power has been, and in some parts of the country continues to be, our principal source of electricity. However, hydro is no longer the unique resource that it once was. Other means have been devised for the generation of electric power on a larger scale. They are virtually inexhaustible and the source materials like oil, natural gas and the nuclear fuels, are much more transportable. This being the case, we are forced back to a consideration of price. Here again we seem to be losing ground.

Fuel-fired stations are becoming more competitive everywhere. Canada is no exception. In six out of our ten Canadian provinces, thermal plants have an edge already. Large installations are even being built in British Columbia, Manitoba and Quebec. What more evidence do we need that the day of water power's undoubted supremacy is over? From now on it will obviously have to compete with alternatives, some of which may be produced just as cheaply, if not more cheaply, in other countries.

Generally speaking, our costs are low. They are low because we have had numerous hydro sites which were easy to develop. The rainfall and the snowfall, collected on plateaus in great natural reservoirs, provide for the storage of water. Steadily flowing rivers brought this potential energy to the doorstep of many a Canadian community. There it plunged down, often over escarpments whose contours did away with the need to build expensive dams and canals. Transmission line investments were also held to a minimum. These were real resources! They were valuable because they:

- (b) Could be operated much more cheaply than other means of producing electric power.

Turning now to the situation in which we find ourselves. . . . As we press back into the wilderness, the outlays associated with transmission are bound to increase. The construction of high dams and the clearing of large, man-made reservoirs are also expensive propositions. Frequently they call for investments running into hundreds of millions of dollars. One of the sobering thoughts which I must leave with you is that the same capacity, in the form of thermal plants, can be built for half or even a third as much.

The mounting volume of our capital requirements is one aspect of the problem. Interest rates are another. Obviously, the economics of "capital intensive"<sup>1</sup> developments like the generation and transmission of hydroelectric power is improved when interest rates are low and demands more revenue support when interest rates are high. The reverse is true of thermal plants whose fixed charges constitute a much smaller proportion of total annual expenses, with fuel making up the rest. To put it another way: high interest rates have an inhibiting effect on renewable resource based activities like the production of hydroelectric power. And, because the "cost of money" may continue to be high due to rising wage rates and other inflationary factors, we must expect increasing competition from other and less capital intensive sources of supply.

Then there is the related problem of technological change. Breakthroughs on the metallurgical front and remarkable improvements in design have meant that the cost of building steam plants has remained virtually unchanged since World War I. . . . combustion efficiencies, meanwhile, have gone up and most station operating expenses have gone down. The net result is that the unit price of thermal power is about the same as it was 30 or 40 years ago. In the United States it has actually *dropped* by about 10 per cent since the late 1940's. Here in Canada, the price of electricity has *gone up* by at least 30 per cent; and in Sweden, a country which is also very dependent on hydro power, it has risen by more than 60 per cent! (See Chart p. 398).

I do not mean to imply that technology has been all on the side of thermal power. Certain capital cost reducing devices like the heavy earth and rock moving equipment, fast-setting cements, new tunnelling techniques, and extra high voltage transmission have come to the aid of our water resource development

<sup>1</sup> The investment per production worker in the Canadian water power industry is now about \$200,000. In all public utilities it is \$30,000; mining, \$15,000; manufacturing \$13,000; trade, \$11,000; construction, \$7,000; and services, \$4,000. In manufacturing the highest figures are oil refining, \$120,000, and chemicals, \$30,000.

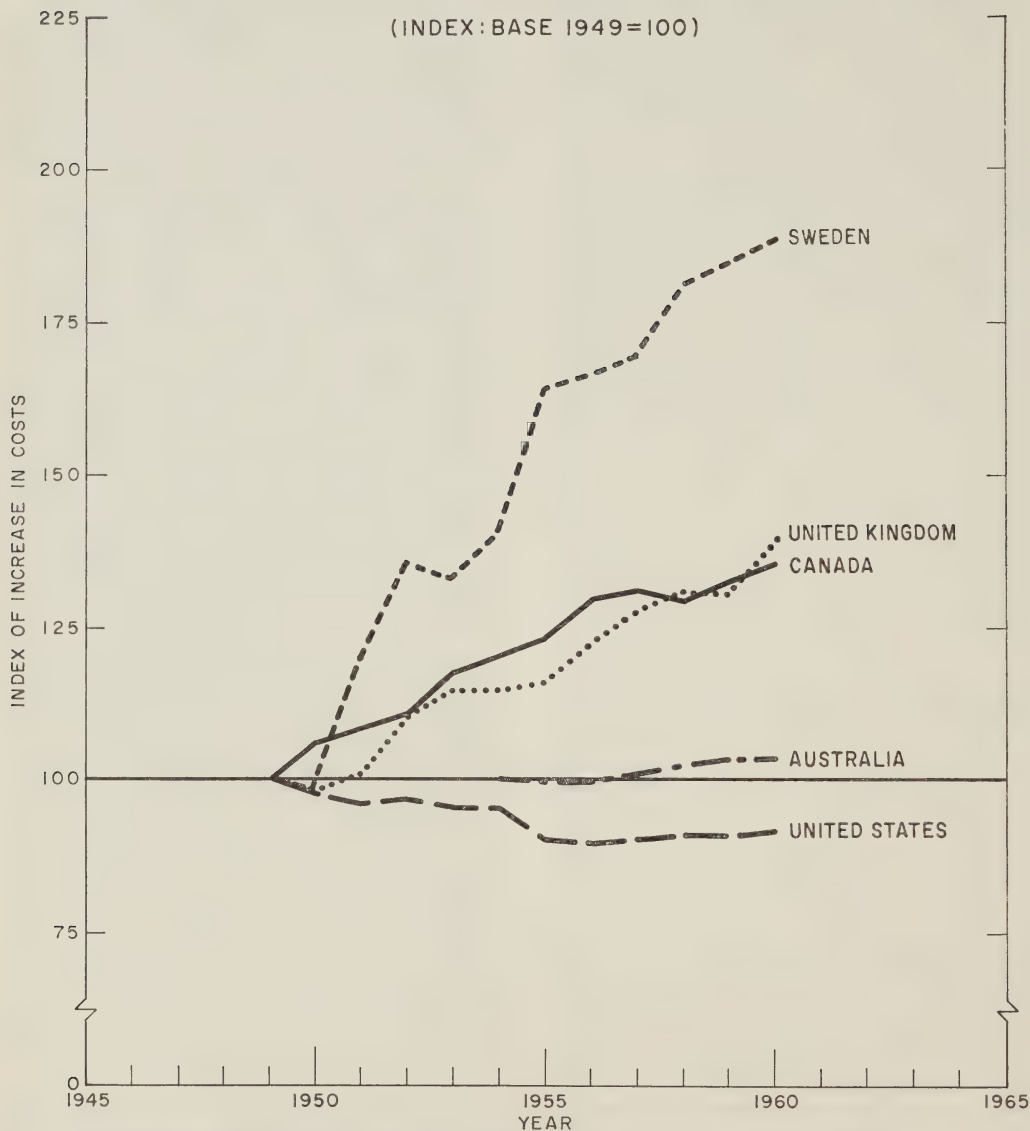
- (a) Didn't require the investment of a great deal of man-made capital; and



# TRENDS IN DELIVERED COST OF POWER

1949-1960

(INDEX: BASE 1949=100)



REFERENCE—ANNUAL REPORTS: SWEDISH ELECTRICAL AUTHORITY, CENTRAL ELECTRIC AUTHORITY OF THE UNITED KINGDOM, EDISON ELECTRIC INSTITUTE, ELECTRICITY SUPPLY ASSOCIATION OF AUSTRALIA (PRE 1954 N.A.), AND D.B.S. BULLETINS

programs. Nevertheless, our clear-cut advantage, based on hydro power, is slipping away. This makes it all the more important that we should look at our highest capital cost projects with a jaundiced eye. Our objective, I suggest, should be to spend less, rather than more, on developments of this kind.

How do we make the fullest possible use of the capital funds involved? Production must be increased per dollar of investment and, to use the language of the system planner, the benefit-cost ratio of each project or program should be kept as high as possible. Looking over the situation, we find that the advantage which hydro systems had over steam plants back in the early 1920's was up around 3 to 1. By 1940, it was down to 2 to 1. Now, with hydro costs rising, and the alternatives to water resource development becoming increasingly competitive, we have to look hard to find circumstances where the benefit-cost ratio is more than 1 to 1. The situation, in other words, is deteriorating—no longer can we take net benefits attributable to water resource development for granted. Advanced techniques like benefit-cost analysis must be taken seriously, and our future planning must exhibit a toughness which has been lacking in recent years.

You know, and I know, that we can rescue some of these marginal programs by "integrating" them with other public works—locks and canals for shipping, flood damage prevention, irrigation schemes, and the like. Possibly the over-all results can be defended on these grounds, but not always. In most parts of Canada we still have too few industries and too few people to give these "other values" real weight. Either they are too small relative to power, or they may themselves be uneconomic in the sense that their prospective benefits are likely to be less than their costs. Under these circumstances, the entire program should remain on the shelf. Any over-all river basin planning worthy of the name would indicate that this be so.

As one who was, until recently, employed by a private investor-owned utility, I am conscious of yet another facet of our problem. The benefit side of the ledger can be increased by introducing such values as improvements in navigation and flood control. But these considerations, in turn, may lead to—or even necessitate—greater participation on the part of governments and government-owned agencies. The field, as far as private enterprise is concerned, is being narrowed down. Single purpose projects may no longer be economic. Multi-purpose projects may have to take their place with all the social and institutional effects which centralized planning entails. The source of much of our capital, therefore, will be changing. More will come directly from the pockets of the taxpayer and less will be sought on the open market through the sale of common and

preferred stock. Financially speaking, our over-all structure for water resource development will become more rigid. Furthermore, it will become more rigid at a time when some of our economic advantages will be passing into the hands of others and when the need for stern checks and balances is more necessary than ever before.

The magnitude of this turn-about in our affairs has yet to be fully understood. For some time now, we Canadians have been investing upwards of \$500 million a year in the development of the nation's water resources. Hydroelectric power, alone, has been absorbing a quarter of all of the new money going into resource development in this country. Narrowing the field down to the so-called "renewable" resources raises the proportion to between 30 and 40 per cent. A corollary of this is that our capital requirements will be reduced if hydroelectric power gives way to other sources of energy. Increased construction in the allied fields of navigation, flood control, irrigation and pollution abatement may partially offset this decline; yet they, in total, cannot make up for the slump in hydro expenditures which may be in the offing.

Our subject this afternoon is "Capital Requirements for Resource Development." I, obviously, have been concentrating on the water sector. But much of what I have had to say can be applied to the development of many of our other resources. We have a wealth of natural capital and we need some man-made capital to put it to work. The more man-made capital we need, per unit of output, the poorer our natural resources must be. There comes a time, therefore, when the investment of larger amounts of man-made capital isn't worth the candle. It simply doesn't pay. There are other, better, and more profitable ways of doing things. You, who are responsible for planning the development of our renewable resources, will do well to bear this in mind.

The lesson which we must learn bears repeating here. Our economy must be flexible in order to survive. If it is going to continue to develop it must be prepared for change. A resource which is a first class resource today may be a second class resource tomorrow. It may, in other words, lose its value as a "strategic area" of growth. It behooves us, therefore, to be on the lookout for other opportunities. The main requirement is that they be dynamic in the sense that they can show a high ratio of benefits to costs. These are the projects which should attract large and growing amounts of man-made capital.

Finally, we have been asked to say a word about "The Creation of a Climate Favorable to the Investment in Renewable Resources." Nothing, I submit, will be more persuasive than success. Success can be ensured by good management and good management, in turn, implies the careful selection of our

lowest-cost resource development opportunities. If we organize our efforts along these lines, we should be able to raise all the funds we need. Our credit rating should go up and interest rates should go down. Technical competence and political stability are two of the pillars upon which we can build. A resource development policy based on sound economic reasoning is another.

**Panelist (Mr. PUSHIE)**

In this Conference and in other conferences, we sometimes make a fetish of using big words and very woolly phrases in saying things which are basically very simple.

It seems to me that you create a climate for investment of development capital into resources by providing investors with the opportunity to make a profit and to continue to make a profit. There is no deep dark secret in any of this. Investors in resource development look for two very simple things; fair treatment and stability of tenure. In this I am not talking of political stability and complex of government change. We at the present time are honoring contracts that were entered into in Newfoundland seventy years ago. There have been many varieties and shades of government in Newfoundland and we do not cross a "t" or dot an "i" in these. This is what I call security of tenure—stability. At least, this has been our experience and you must forgive me this afternoon if I look at all this from the standpoint of somebody who comes from a young and not completely integrated part of Canada.

If you accept the idea that private enterprise is going to provide the development capital for Canada, you have to give it this overriding profit assurance and continuity. Certainly we in Newfoundland look to private enterprise to provide this kind of capital on the scale required. Among other reasons, we have far too many demands on our financing, as a small province, for roads, schools and hospitals, health and welfare services, and all the other benefits which our people expect as part of the great Dominion of Canada. We have far too many demands in this field to have very much bond-raising and fund-raising available for capital investment in resources development, even if we wanted to do it.

In resource development, we have followed a program of big concessions to major corporations and companies, and we think that this produces results in getting major corporations, or groups of corporations, to do development work in the real sense of the word, both in the field of renewable and in non-renewable resources. I disagree with the Conference theme that you can discuss intelligently development in Canada and ignore the non-renewable resources, but this is not our problem this afternoon. Pre-development surveys under this kind of development can run into

many millions of dollars. Put simply: while we have, as a provincial government, done hydro surveys, timber surveys, mining and diamond-drilling programs, to prove these resources, we eminently prefer to have other interests than the provincial government make this kind of expenditure if we can get away with it. If this sounds like a boost for good old private enterprise in the present day Canadian economy let me make the point that it has been good old private enterprise which has been, in the main, responsible for the resource developments of the province of Newfoundland in all fields, from hydroelectric utilities to paper mills. The provincial government itself has done some limited pump-priming in fisheries and other industries, has guaranteed bonds for resource railway construction, until private enterprise moved in and assumed the obligation. And we have even gone to the extent of guaranteed bonds for mining companies to get mines underway; if "mining" is not a dirty word in this Conference. The scope of the provincial government's entry into this particular field of resource pre-development work has been small in comparison with, and completely overshadowed by, the magnitude of private capital invested in resource development in the province. In putting through concession agreements with companies both for resource-based industries and other industries, we have dropped any direct tax on development capital coming in. There's no sales tax, for example, on major capital investment or capital expansion in industry in the province; the tax is paid simply on capital replacements or on operation.

To us, it is very, very simple. If you want development capital coming in, you do not tax its entry into the province. We even exempt certain development functions from such things as gasoline tax and the other things which are within the ambit of provincial responsibility. We go further than this. To ensure that local communities cannot load the full burden of municipal needs onto an industry, particularly in the one-industry area, we limit the municipal tax-take from an industry to 40 per cent of the total budget raised by the local government. We are probably at an earlier stage of resource development than many parts of Canada. We are perhaps as a result, a low-royalty, low-stumpage, even in some cases we are a no-stumpage province, as far as resource development is concerned. What we say to development capital is something very simple—"You are as welcome as the flowers in May." And this welcome extends not only to Canadian capital, but to American capital and European capital.

Far and away the bulk of the development capital for resource development in our province has been American; we see nothing wrong with this. Let me make one point: as a young and growing province, involved in major resource development, we have



never found enough Canadian capital to do the job that is needed to be done. We would welcome ten times, a hundred times, the present American investment in resource development in our province. This is currently running purely on capital from American sources, which is at better than four hundred million dollars right now. This is the amount of money that American companies are spending currently in Newfoundland. It has nothing to do with what has been spent there before. We have also had Canadian capital, British capital, Italian capital, German, Belgian, in resource development in Newfoundland. But we have found that, even for the bond money for the major resource development after the equity has been put in, the source is principally the United States. Until such time as Canadian investors and Canadian bond houses are prepared to provide this kind of development financing, we feel that the pattern of finding money in the U.S. or elsewhere is likely to continue if this kind of major resource development is going to continue. We go as far as we can provincially to create a climate for development capital but, let us face it, most of the inducement, the real inducement possibilities, are within the control of the federal government.

If there is one other field that might be touched upon, it is the field of interprovincial co-operation. There is surely enough ingenuity in Canada to solve simple problems, and I will give you one example. We have in the center of Labrador one of the world's natural hydroelectric developments, natural in the sense that nature has done most of the work; you could pick the water up, run it through an old portage trail and you have a drop of twelve hundred feet—four million horsepower. Pick it up again down the river and you have six million horsepower. Surely without waiting for all these fantastic experiments in D.C.—stepped up voltage experiments and the like—surely there is enough ingenuity in Canada to get that which is running into waste out into the sea, convert it to hydro power and move it into areas like Ontario, which at the present time are upsetting the balance of payments with the United States on coal imports. Surely there is enough ingenuity in Canada to integrate provincial grids while we are waiting for this nonsense of transmitting power over thousands of miles.

These are just a few thoughts to stimulate this meeting.

#### **Panelist (Mr. BLACK)**

I intend to deal briefly with the roles of the various government agencies responsible for the promotion of industrial and resource development, and then go on to discuss a program of financial assistance for industrial and resource development.

As a result of our federal system of government in

Canada, with mineral and natural resources, agriculture and property and civil rights falling under provincial jurisdiction, the responsibility for the promotion of resource and industrial development has devolved upon the ten provincial governments. Had the provinces not been given this responsibility by law, they would undoubtedly have, in any case, assumed it in fact. As the development needs of each area could not have been adequately served from a single location such as Ottawa, distant as it is from most of the provinces in Canada. It would have been administratively impossible for the federal government to carry out as massive a job of promotion as is being carried out by the ten provinces, nor could it have done it on a completely equitable basis. However, although the federal government does not carry the primary responsibility for industrial development in Canada, its role is a very important one. It is responsible for creating a national climate favorable for investment in industry and resources and, through the Dominion Bureau of Statistics and other agencies, for providing much of the data which forms the raw material for the provinces' promotional activities.

However, the principal task of isolating ideas for new industrial possibilities, of preparing market reports and in many cases feasibility reports on these possibilities, and of going out to seek sponsors at home or abroad, is carried out by each province. Between the provinces there exists the keenest of competition and in many cases three provinces may be approaching the same prospect for a particular industry at the same time. Without doubt this competition has resulted in much greater total development in Canada than would have existed without it. Despite this competition, there exists between the promotional agencies of each province a spirit of mutual helpfulness and co-operation, with a sharing of program methods and activities and with a keen interest in the problems and progress of sister provinces.

In addition to their promotional function, the provinces carry a major responsibility for creating a favorable climate for investment within their jurisdiction. This may take many forms, including the provision of technical and other assistance to present industry, the sponsoring of productivity programs, the preparation of market studies, the development of proper government purchasing policies and assistance in the sale of local products both within the provinces and for export. The provinces also seek to improve the forms of communication and transportation, and in many cases, through provincial co-operation, can provide low industrial rates for power and gas services. The provincial agencies also provide advice to cities for the improvement of their industrial facilities and assist them in their local promotional programs.

At the risk of appearing somewhat parochial, I

would like to mention a program which Saskatchewan pioneered among the provinces in order to provide the necessary financial support for prospective or existing industries. This program was designed to improve the climate for development of manufacturing resource industries. I refer to the establishment of the provincial Industrial Development Fund in 1947. This Fund, which was largely patterned after the federal Industrial Development Bank, was initially designed to provide financial assistance to small and medium size plants. There was a real need for this type of assistance within the province, as many prospective industries were either too small to obtain necessary funds from investment houses or were too large, or in some cases, too speculative to obtain funds from the chartered banks. The services of the Fund were also made available to existing industry wishing to expand its productive facilities. Loans from the Fund were made on the security of fixed assets and normally amounted to 50 per cent of the value of land, buildings and equipment. Loans were repayable within a period of five years and interest rates ranged from 5 per cent to 7 per cent, depending on the marketing conditions for provincial borrowing. As industrial development in Saskatchewan did not assume any significant proportions until the beginning of the oil boom early in the fifties, little use was made of the facilities of the Fund until that time. Interestingly enough, the first loan made by the Fund was in the resource sector, to support the establishment of the province's first plywood plant.

Since its inception in 1947, until the end of 1960, the Fund had made a total of 79 loans covering some 31 industrial categories and with products as diverse as poultry evisceration and ammunition. Over two-thirds of the plants were new to the province and a high proportion of these would not have been established in the province had the facilities of the Fund not been available. In 1955, the government decided to embark on a new method of attracting industries through the guarantee of bonds and other securities for greater amounts than would normally have been made available by the Fund.

As a direct result of this program, the government was able to assist in the establishment of its first cement plant by extending a guarantee of some five and one-half million dollars. For years the province had been suffering from an inadequate supply of cement and often had to rely on United States and European sources at almost prohibitive laid-down costs. In supporting this industry, the government undertook a considerable degree of risk but felt that such a risk was necessary in order to assist the construction industry and to provide the basic raw materials for concrete product industries. As consideration for the guarantee services, the province was paid an annual fee of 2 per cent, and in the first year re-

ceived something over \$110,000 without the necessity of expending actual capital. The plant was an immediate success and the government was relieved of its contingent liability after the third year of operation.

Following the successful establishment of a pipe plant in 1957 through assistance provided by the Fund, the government undertook the following year to provide financial support to a proposed mill for the production of ingots, skelp, plate, and structural materials. As in the case of the cement plant, financial assistance was provided in the form of a guarantee, against the security of fixed assets. The plant, which produced its first ingot in 1960, ran into serious production problems during a lengthy period of running in, but is now producing materials to A.P.I. specifications at approximately standard rates of yield. In supporting this venture, the government assumed even greater risks, and of course some degree of risk will continue until the plant has been in operation for several years, has fully standardized its production procedures and has achieved a stable position in the western market.

To date, most of the financial assistance provided by the Fund has been available to industry outside the field of renewable resources. This form of assistance is equally available for the development of our forest resources. In a landlocked province, distant from world markets, our efforts to date have not been successful in attracting a pulp and paper operation to the province. However, with the rapid development of paper production in the mid-western states, we feel that the time is not far distant when a Saskatchewan operation will become feasible. The province will leave no stone unturned to make the establishment of such a plant attractive to investment capital.

This particular method has not been exactly duplicated elsewhere in Canada but somewhat similar facilities have been established latterly in the province of Manitoba and previously in Nova Scotia and New Brunswick. But the spirit of this approach lies behind the activities of all Canadian provinces in a program to accelerate their own industrial development.

*(Panel members then answered questions from the floor.)*

QUESTION: How far should government go in the form of assistance to attract resource industries and to attract capital into resource industries?

ANSWER: (Mr. Pushie) Mr. Chairman, I think you go as far as you can to attract it in, you go as far as you have to go to enable them to operate an industry successfully and profitably. I think each individual case requires study. I don't agree completely

with what Mr. Mackenzie said, that is, when the products are saleable that all these things happen. This is not necessarily the pattern. If I can drop yet another dirty word into this discussion this afternoon, quite often it is the promoter in between who makes the difference between a resource being developed and not being developed. As far as we go, (as a government we go as far as we can), we try and keep one or two things in the locker, we try and have a few royalties and a few returns to the Crown to justify the development of an asset, but we certainly encourage them to come in. Canada is selling its newsprint in the world market, and if Canada does not catch the market, somebody else will very quickly. In the field of iron ore, there are deposits on both sides of the Atlantic that are higher grade and cheaper to operate than the ones that we have. Why do we have American interests and other interests coming into Canada and spending hundreds of millions of dollars and signing up for twenty years? They know that if anything happens they have a source of supply in Canada. What they are buying, in effect, is the stability of Canada.

**FURTHER COMMENT:** (Mr. Black) A provincial government cannot carry out a very active role in the attraction of a mining industry, and it is very doubtful whether a government can make a practice of loaning money to such ventures, as in most cases they are usually quite speculative. However a government can increase the likelihood of development through creating a favorable climate and by assisting those taking senior risks during the exploratory stages.

In the forest products industry, I think the situation is quite different. This industry is less speculative, and very often has a much greater impact on the province's economy. I think in that area a government should be prepared to make some pretty generous forms of assistance in terms of financial assistance, low stumpage rates, particularly during its first years of operation when it is running into its highest costs.

I might say in mining, however, the government should be prepared to charge very low royalties during the running-in period, because again in the mining industry, the costs are particularly heavy in the first two or three years of operation.

**QUESTION:** What validity is there in the often heard suggestion that pulp and paper cannot feel safe in moving into Saskatchewan because of an unsympathetic political climate?

**ANSWER:** (Mr. Black) I think the proof of the pudding really is in the fact that some of the industries most conscious of political climate or lack of a favorable political climate, such as the oil industry and the industrial mineral and mining industries, have come

"en masse" to the province and have invested there, and I think in all cases have been happy with their experience. Throughout the fifties capital expenditure within the province has been higher than the Canadian average. I think this speaks worlds in terms of the general recognition of the stability of the government in the province.

**QUESTION:** The United States has bought a lot of our resources at low prices. Should we not discriminate in favor of Canadians in resource ownership?

**ANSWER:** (Mr. Davis) In the case of most products, an open market exists. This is generally true of the products of the forest industries. A few exceptions exist in the case of minerals. There a U.S. parent corporation may dominate the situation to such an extent that the question of a true arm's-length price may come up. However, I know that the Department of National Revenue in Ottawa makes it its business to investigate such situations and, if necessary, sets its own price. This price of course affects the profit made in Canada, and hence the amount of income tax payable in Canada.

By and large, however, there is sufficient competition, to make sure that these prices are reasonably in line with the true economic situation in which we find ourselves.

The question of concessions comes up in a number of fields. It has come up time and again in respect to power. Power in Canada is developed either by Crown-owned agencies and sold in effect at cost, or sold by regulated privately-owned utilities whose rate of profit is limited. The price therefore is often less than it would be under open competition. This price advantage to consumers, Canadians regard as something they want to confine to Canada; not to sell this way on the export market; sell at a profit.

This raises the question of whether government-owned agencies, should try to make a substantial mark-up on their export sales. The same applies to private corporations. Should they not obtain as good a price as they can in export sales? As a Canadian I would like to see the price as high as possible.

**QUESTION:** (addressed to Mr. Tremblay) Would you please enlarge your ideas about the setting-up of an investment fund for aiding resource development?

**ANSWER:** (Mr. Tremblay) \*As I have indicated in my text, the idea of the industrial fund in the Province of Quebec originates from the fact that saving Canadians seek safe investments and are not much in favor of risk investments or of taking risks in the development of our natural resources. A considerable volume of savings is directed principally toward savings establishments.

\* Translated from French.



Referring more particularly to the situation in the Province of Quebec, we have a network of savings establishments, the Credit Unions which now have capital assets of over \$700 million. These savings are channelled from all regions in the province and from all social classes.

These savings have been used to good effect but according to the directors of these establishments, too little was used for the development of resources and secondary industries. On the other hand, those savings establishments have to meet with administrative requirements. They are not easily inclined to change the character of their establishments and to convert them into industrial investment institutions. In my opinion, this apprehension is quite well-founded.

How could we attempt to fill up this gap between the important financial needs of industrial undertakings and the considerable savings channelled by financial establishments toward safe investments? We believe that there was a gap in the mechanism of our financial establishments in the Province of Quebec. It is for this reason that the government, without wanting to directly assume the responsibility for such an establishment, desires that such an institution be created, with a very large degree of participation by the financial establishments of the Province of Quebec, of Canada and even of foreign countries, as well as a large participation by the saving public, precisely in order to direct those funds toward industrial uses. Regarding the machinery of that organization: a few general principles have already been indicated by the Quebec Prime Minister. The machinery of the institution will be adapted to the needs of financial establishments that might be interested in using this medium to deal with the industrial interests in the province. There is no preconceived method at the present time. The discussions that will take place with financial groups of different types will make it possible to specify the functions and the mechanisms of this venture.

We feel sure that whatever may be the machinery adopted, such an institution would be of great service in the development of new undertakings or the expansion of existing undertakings in the Province of Quebec. In my text I have pointed out that this solution should probably be generalized.

I know that several provinces are interested in channelling funds toward industrial sectors, mainly toward secondary industries. But I believe that the experience of those provinces shows that it has always been extremely difficult to associate private institutional or individual capital with loans for industrial development. Therefore, we believe that an effort made by the government to crystallize the interest of financial institutions could be a valuable experience for other provinces and for the country as a whole.

QUESTION: (addressed to Mr. Mackenzie) You

state, "Encourage processing in Canada where feasible but do not push processing at all costs." How do you look on what Mr. Black says is being attempted in Saskatchewan?

ANSWER: (Mr. Mackenzie) Mr. Black was talking about encouraging more pulp and paper mills and getting some into Saskatchewan. I happen to be in the business of making pulp, and just at this particular moment I think we do not need any more pulp; we have got lots of it.

So I am not very enthusiastic about plans to finance additional industry in some lines. What I said before, I think, was that there is a limited field in which governments can encourage processing in Canada. But I think it is a very limited field. Where it can be done, all to the good. Whether a project sponsored by a province is good or bad, time will tell. If Saskatchewan is encouraging steel fabrication in the province, time will tell whether or not this is a good economic decision. Frankly, I do not know. But I see no great harm in this. I think these things can be tried. I think the principal point is that there have been suggestions that we should not have exported iron ore from Labrador; we should have sat on the iron ore and waited until it could be matched up with Nova Scotia coal and sell it as steel. And I say that this is something that Canada cannot determine at all. It is a question of the market for steel. There just isn't a market for that quantity of steel at this stage of the game. Therefore I am all in favor of selling the iron ore.

QUESTION: Is the present government policy in line, or almost in line, with your theory as to the desirable policy with regard to tariff application? Do you agree with the selection of industries that appear to be protected by that policy?

ANSWER: (Mr. Mackenzie) Well, I don't know if this is a place to discuss what the present government policy is. I think the greatest trouble is a lack of policy on these matters, that they have not been thought through.

We are in the chemical business and, as you probably know, the Tariff Board are holding hearings now on the chemical tariffs. Our own company and the industry generally have put in submissions, suggesting modifications to the tariff. We have asked for some modest increases, and we have done this on the basis that these are necessary to develop a chemical industry in Canada.

The question is: would you be in agreement with the selection of industries that appear to be protected by that policy? Well, I don't know if I quite get the point. I certainly agree that somebody has to make a decision in government, that some measure of protection either is, or is not, desirable for the chemical industry. I think these decisions have to be

taken all the time, that is part of the art of government. And any time a tariff is put on, or is raised, or is lowered, somebody is expressing an opinion and is, in fact, selecting industries. The choice of those industries to select depends on the wisdom of the government of the day. Obviously there are some industries that do not look as though they would be a great success in Canada; there are others that are natural ones, because they are tied into some of our resources and the processing of our resources.

I think the answer is yes, I am in agreement with a selection of industries that appear to be protected by a policy of selective tariffs.

QUESTION: (addressed to Mr. Davis) Is it practical to finance and develop now all the potential hydro power in Western Canada, with a view to exporting all surplus on a recoverable basis?

ANSWER: (Mr. Davis) There are tremendous resources in the West, though some of these resources will be quite expensive to develop. Our own requirements in the West are not large because we have not too many people now. The growth in our requirements, even if it is exceptional, will not mop up more than a fraction of our total power resources for years to come. On the other hand adjoining parts of the United States are fairly well developed industrially. They will be interested in our power as long as the price is right. We can sell some of our resources, but we would not be able to market most of our potential quickly. Meanwhile alternative sources will be increasingly competitive. I think it is only a question of us exporting some part of what is now deemed to be a very substantial resource.

QUESTION: What are the real reasons inhibiting the development of the Athabasca Tar Sands, appreciating that it is now accepted that oil can be extracted from them commercially?

ANSWER: (Mr. Davis) Well, I am not an expert on the Athabasca Tar Sands. However, I understand that the costs of processing the tar sands and producing oil is not too far removed from the cost of conventional recovery of crude oil from the ground. These costs certainly have been high but they are being brought down. Still problems exist. If such an industry were to go ahead, based on the tar sands, a very large amount of capital would be required for plant, pipelines and other equipment. This would be predicated on a guaranteed market volume and price for a good many years ahead. It would have to take precedence over conventional production. It would have to get to the market first.

This is quite a difficult situation for any government to administer. Is it going to limit other sources of production? Or will the government nominate one gigantic corporation or complex to do the job and look after market growth for quite a

few years ahead? I doubt if this is possible under present circumstances.

QUESTION: Do you think, if we were to go into the Common Market, or if Britain were to go in, that this would have a material effect on our resource development?

ANSWER: (Mr. Tremblay) \* Yes, I believe the problem is quite simple if we limit ourselves to the natural resources field, because the European Common Market with its rapid development will need, more and more, to obtain supplies of resources which are located outside of its territory. The Canadian undertakings engaged in the primary development of our resources would certainly benefit greatly from a decision, on the part of Canada, to join this common market.

However, a difficult problem is raised by the existence of other kinds of undertakings on our territory. Before a decision is taken one way or the other, it would be necessary to draw up very precisely the balance sheet of advantages and disadvantages of Canada joining the Common Market. The disadvantages to secondary industry might probably be reduced if some adjustments and techniques were developed within the Common Market. This is extremely interesting from that point of view. Adjustments might be made easily to enable some of our secondary industries to expand in the European market, in countries where the tariffs are not prohibitive. On the other hand, adjustments might be made to permit some other industries, which would have to curtail their activities, to reconvert for new purposes.

I believe that no comprehensive study of the problem has been made so far in our country. I am sorry about this because probably very soon, Canadian public opinion will have to decide on one of two courses: To join the Common Market along with Great Britain or to enter into an alliance with the United States.

These are the basic problems which have not yet been studied and which the public is completely unable to judge at the present time; still, it is possible that major decisions will have to be made very soon. I regret that in Canada as a whole, people are so late in realizing that this requires a basic study which has not been made, and that perhaps we shall take a decision one way or another without seeing the implications of our behavior at that time.

FURTHER COMMENT: (Mr. Pushie) I think the climate now is probably twice as bad as it was three months ago, and three times as bad as it was six months ago. You should not overstate or overemphasize these things, but within the past two weeks I

\*Translated from French.

have talked to some fairly big investment people from the U.K. and from the U.S. They have been extremely concerned with long-range investment in Canada right now, even to suggesting that they might liquidate some of their holdings in Canada. I don't think it is quite this bad, but I do think that quite recently—within the past year or so—the Canadian image, if that is a permissible word, has changed a little bit in Europe and in the U.S. as a good, safe, sound area in which to invest money in resource development. I wish it were otherwise, but I am afraid that is the situation as I see it.

**FURTHER COMMENT:** (Mr. Mackenzie) Mr. Chairman, it seems to me that this question is relative. Resource development capital looks at various alternatives, and the facts are that investment in Europe, through the success of the European Common Market, has attracted a great deal of capital into that part of the world. A tremendous amount of American capital is being invested over there now, in the past few years, and the record shows that capital inflows into Canada have been decreasing. Now whether this is good or bad I don't quite know. I suspect that it is the fall-off in capital inflow into Canada that has had the major effect on our Canadian exchange. Since Canada is an exporter essentially, in our companies we export about 75 per cent of everything we produced, I am all in favor of a discount on the Canadian dollar. So perhaps it is a good thing to shake a bit of confidence? I agree with Mr. Pushie that confidence has been shaken, but I think it is not only that. I think it is that other places have become relatively more attractive. I think that has quite a lot to do with it.

**QUESTION:\*** (addressed to Mr. Tremblay) Mr. Kierans, president of the Montreal Stock Exchange,

favours Canada entering the European Common Market, and predicts that this decision would bring about an important wave of expansion for the Province of Quebec. I should like to ask you what you think of Canada entering the Common Market, from this point of view?

**ANSWER:\*** (Mr. Tremblay) This question is closely related to what I have said previously concerning the general balance sheet that should be drawn up before a decision is taken. It is certain that the Province of Quebec, as compared with other provinces, has abundant natural resources already being exploited, and also has considerable reserves of resources. To me it seems beyond question that joining the Common Market would mean considerable expansion for the undertakings already under way in the Province of Quebec.

On the other hand, it must not be forgotten that another aspect of the balance sheet must be taken into account. Many secondary industries, of small or medium size, all over the province, have managed to survive because of the remoteness of foreign sources of supply and because of protection by Canada. If these protective tariffs were abolished, several of our small and medium undertakings, which provide employment in numerous small remote centers, would meet with great difficulties. The social problems and re-establishment of the population of these areas would be considerable, unless a general plan were drawn up, and unless alternatives materialized for the affected areas. I am not readily inclined to give a speedy opinion in favor of the Common Market, unless the foreseeable disadvantages of this measure were studied and the steps to be taken, with their costs, were very accurately estimated.

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\* Translated from French.



# *Income and Employment Effects of Renewable Resource Development*

FRIDAY, October 27

Chairman: JEAN MARCHAND, Président, La Confédération des syndicats nationaux.

Speaker: W. R. DYMOND, Assistant Deputy Minister, Canada Department of Labour.

Panel: J. A. ROBERTS, Deputy Minister, Canada Department of Trade and Commerce.

MAURICE LAMONTAGNE, Economist, Ottawa University.

DONALD E. ARMSTRONG, Director, School of Commerce, McGill University.

DALTON ROBERTSON, Associate Editor, The Financial Post.

## **Chairman (Mr. MARCHAND)\***

This afternoon we will discuss an extremely important subject: the problem of income and employment in relation to the development of renewable resources. Renewable resources are not developed for the sake of development but in order that they may bring profit to our people, contribute to the economic growth of our country and in general contribute to increasing the income, or rather improving the standard of living of the population.

Until now, I think that there has been a lack of planning. I am convinced that if from this Conference were to emerge some rather definite objectives, namely some economic objectives related to the planning problem, the minor jurisdictional, constitutional and even administrative problems would easily solve themselves under the pressure of the population. In short, I believe that the main problem in Canada at the present time is not a constitutional but an economic problem, and that the economic solutions recommended by specialists in this field will sooner or later surely be applied. Given well-defined objec-

tives, the population will surely set aside minor objections.

## **Speaker (Mr. DYMOND)**

*Employment and income in renewable resources industries*

### *1. Introduction*

I must say at the outset that this topic is a rather broad one, encompassing the five renewable resources of agriculture, forestry, fisheries, wildlife, water, and also recreational activities. Our present store of empirical economic data leaves a good deal to be desired as far as the treatment of all of these resources is concerned. We have, however, reasonably accurate data on employment and income on four of them; agriculture, forestry, fisheries and to some extent on wildlife. Even for these industries, national statistics could provide more coverage than at present, as I will point out later. Water resources and recreational activities, while they are economically important and no doubt are becoming relatively more important in comparison with other industries, do not provide mainstay employment as directly at present as the four industries which we will now review.

\* Translated from French.

2. *The long-term relative decline in employment in agricultural, forestry, fishing and trapping industries*

Since the turn of the 20th century, the economic dependence on the primary resources of agriculture, forestry, fishing and trapping has greatly diminished. In 1901, the primary sector of these four industries provided the main occupations for three-quarters of a million persons. This was 43 per cent of the 1.8 million people who were gainfully occupied in Canada (Table 1 and Chart I). This employment, I might emphasize, was provided by the primary sector of these industries alone. If we added to this the employment provided in secondary manufacturing of

these primary products, the total influence on employment would have been much greater<sup>1</sup>.

By 1951, the percentage of people gainfully occupied in Canada in primary agriculture, forestry, fishing and trapping had dropped to 18 per cent of the total. There had been an absolute increase from three-quarters of a million to about 1 million people in these four primary industries, but the total labor force in Canada had almost tripled, and there were 5.2 million people gainfully occupied in Canada in 1951.

<sup>1</sup> Unfortunately the annual Census of Manufacturers was not instituted until 1917. Thus comparable data for secondary industries is not available.

Table 1. Numerical and Percentage Distribution of the Labour Force by Occupation in Agricultural, Fishing, Trapping and Logging Activities, Canada and Five Labour Force Regions, 1901 and 1951

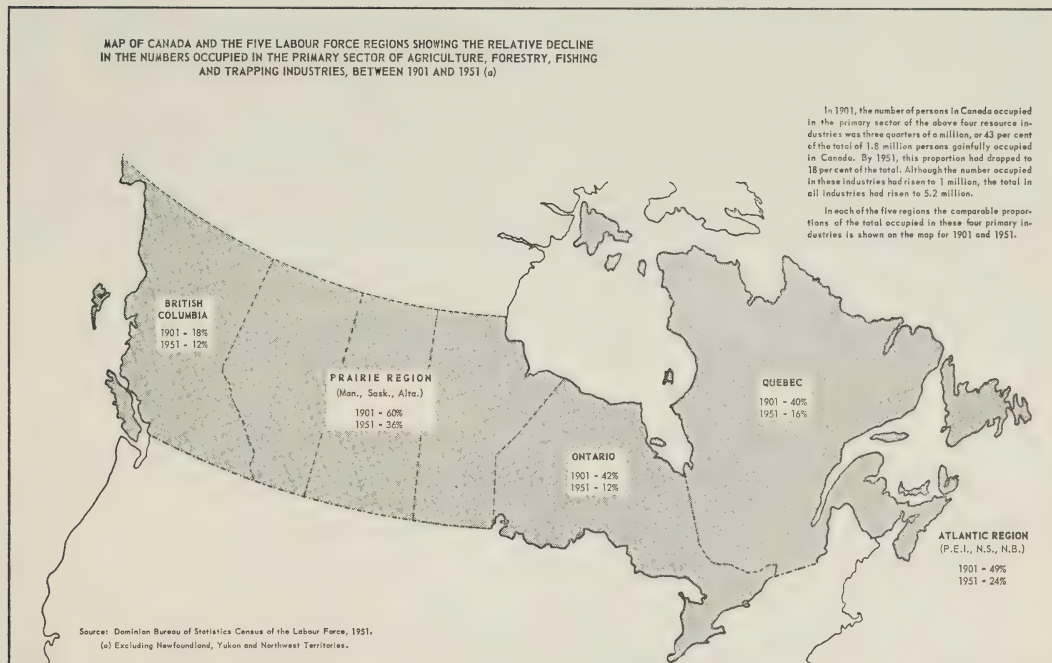
Year	Occupations	Canada <sup>(a)</sup>	Atlantic	Quebec	Ontario	Prairies	British Columbia
(thousands of persons)							
1901	All occupations.....	1,783	301	512	754	134	82
	1. Agricultural.....	717	125	196	307	79	10
	2. Fishing and trapping.....	27	18	4	2	1	2
	3. Logging.....	16	3	4	6	0	3
	Sub-total 1 plus 2 plus 3.....	760	146	204	315	80	15
1951	All occupations.....	5,180	424	1,472	1,885	955	444
	1. Agricultural.....	827	63	195	203	337	29
	2. Fishing and trapping.....	35	17	6	3	4	5
	3. Logging.....	96	21	36	17	3	19
	Sub-total 1 plus 2 plus 3.....	958	101	237	223	344	53
(percentage of all occupations in agriculture, fishing trapping and logging)							
1901	All occupations.....	100.0	100.0	100.0	100.0	100.0	100.0
	1. Agricultural.....	40.2	41.5	38.3	40.7	59.0	12.2
	2. Fishing and trapping.....	1.5	6.0	0.8	0.3	0.7	2.4
	3. Logging.....	0.9	1.0	0.8	0.8	*	3.7
	Sub-total 1 plus 2 plus 3.....	42.6	48.5	39.9	41.8	59.7	18.3
1951	All occupations.....	100.0	100.0	100.0	100.0	100.0	100.0
	1. Agricultural.....	16.0	14.8	13.2	10.8	35.3	6.5
	2. Fishing and trapping.....	0.7	4.0	0.4	0.1	0.4	1.1
	3. Logging.....	1.8	5.0	2.5	0.9	0.3	4.3
	Sub-total 1 plus 2 plus 3.....	18.5	23.8	16.1	11.8	36.0	11.9

SOURCE: DBS Census of the Labour Force, 1951.

<sup>(a)</sup> Excluding Newfoundland, Yukon and Northwest Territories.

\* Less than one thousand.

Chart I



In the Atlantic and Prairie regions, particularly the latter, these primary industries were still very important in terms of employment in 1951. In the three Prairie Provinces 36 per cent of the total who were gainfully occupied stated their main occupation to be farming, forestry, fishing or trapping.

In both Ontario and British Columbia, on the other hand, these four primary industries accounted for only 12 per cent of the total number of gainfully occupied people. Fifty years earlier, 42 per cent of the total in Ontario had been occupied in the same primary industries.

### 3. Employment in primary and secondary agricultural, forestry, fishing and trapping industries from 1949-1959

If we now concentrate on the trends in employment over the past decade, it is evident that the decline in the primary sector of these industries is now continuing, both in absolute numbers and relatively in relation to total employment in all industries.

Between 1949 and 1959, employment in Canada in the primary sector of agriculture, fishing and trapping showed a very noticeable decline. Although employment in primary forestry was the exception, showing quite an increase over this period, the overall decline in the four industries was from 1.2 million to .8 million or by 32 per cent in this one decade. (See Tables 2 and 3). During this interval, employment in the secondary sector of these industries<sup>2</sup> showed a small increase, but the sizeable decline in the primary industries more than offset this gain. The net effect was that between 1949 and 1959 total employment in both the primary and secondary sectors of these four resource industries dropped from 35 per cent of total employment in Canada to 23 per cent (Table 2 and Chart II).

The relative loss in employment in the primary and secondary sectors of these four resource industries

<sup>2</sup> That is, those employed directly in manufacturing products originating from Canadian farms, forests, fishing and trapping industries.



tries between 1949 and 1959 was practically all accounted for by a gain in employment in tertiary industries, particularly, in the service trade and finance industries (Table 4). It was not a case of other commodity-producing industries, such as mining, offering increased employment, as there was no gain in these industries during the decade.

It should be noted, however that the total employment provided by the primary and secondary sectors of these four resource industries is actually greater than that shown by data in tables presented here. In the manufacturing industries it is impossible to allocate the origin of employment for a number of goods that have a mixed product content. In 1959, manufactured goods of mixed origin provided employment for about 140,000 employees in Canada. Assuming that the origin of goods from agriculture, forestry,

fishing and trapping accounted for about 48 per cent<sup>8</sup> of the employment provided by mixed origin goods, this would add about 60,000 to 70,000 employees to the total shown in the secondary sector of these industries in 1959.

Within the five regions in Canada, the primary and secondary sectors of the four resource industries still provided 33 per cent of total employment in the Prairies in 1959, 26 per cent of the total in the Atlantic Provinces and 23 per cent in Quebec and British Columbia. In Ontario a smaller proportion, 18 per cent of total employment, was provided by these same industries (Table 2 and Chart II).

In the decade between 1949 and 1959, there was

<sup>8</sup> This was the percentage of persons in all manufacturing directly engaged in manufacturing products from these resource industries in 1959.

**Table 2. Employment in Primary and Secondary Renewable Resource Industries in Relation to Total Employment in Canada and the Five Labour Force Regions, 1949 to 1959**

Year	Popu- lation	Labour Force	Total Em- ploy- ment	Primary Resource Employment				Manufacturing Employment Originating from:					Total Primary plus Secondary	Per Cent of Total Employ- ment
				Agric.	For- estry	Fishing and Trapping	Sub Total	Can- adian Farm <sup>(a)</sup>	Forest	Fishing	Trap- ping	Sub Total		
	(annual averages in thousands of persons)													
Canada														
1949.....	13,447	5,083	4,913 <sup>(b)</sup>	1,077	69	26	1,172	248	256	12	8	524	1,696	35
1959.....	17,442	6,228	5,855	692	94	15	801	256	288	13	5	562	1,363	23
Atlantic														
1949.....	1,576	455	429	83	16	18	117	12	27	8	*	47	164	38
1959.....	1,857	553	493	56	25	8	89	10	20	9	*	39	128	26
Quebec														
1949.....	3,882	1,423	1,369	242	27	2	271	106	79	1	4	190	461	34
1959.....	4,999	1,752	1,613	154	32	1	187	92	88	1	3	184	371	23
Ontario														
1949.....	4,378	1,815	1,766	283	14	2	299	95	87	0	3	185	484	27
1959.....	5,952	2,290	2,187	174	13	1	188	109	104	—	1	214	402	18
Prairies														
1949.....	2,474	953	929	432	1	1	434	24	16	*	1	41	475	51
1959.....	3,030	1,071	1,036	284	2	2	288	31	21	—	1	53	341	33
British Columbia <sup>(c)</sup>														
1949.....	1,137	437	420	37	11	3	51	11	47	3	*	61	112	27
1959.....	1,604	562	526	24	22	3	49	14	55	3	*	72	121	23

SOURCE: Dominion Bureau of Statistics Labour Force Surveys and DBS Manufacturing Industries of Canada.

<sup>(a)</sup> Excludes employment in manufacturing imported farm produce.

<sup>(b)</sup> Excludes Newfoundland.

<sup>(c)</sup> British Columbia includes Yukon and Northwest Territories.

\* Less than one thousand.

very little change in the distribution of employment between regions in these resource industries. In both 1949 and 1959 the Prairie Region accounted for the highest proportion of employment in the primary sector but, because of their overwhelming edge on manufacturing in the food products and wood-using industries, Quebec and Ontario had slightly higher numbers of persons employed in the combined total

for both the primary and secondary sectors. In 1959, combined primary and secondary employment in agriculture, forestry, fishing and trapping industries in Ontario accounted for 30 per cent of the Canadian total. In Quebec the comparable figure was 27 per cent, in the Prairie Region 25 per cent, and the Atlantic and British Columbia regions each accounted for about 9 per cent of the total (Table 2(a)).

**Table 2(a). Percentage Distribution of Employment in Primary and Secondary Renewable Resource Industries and Total Employment in Canada, Within the Five Labour Force Regions, 1949 and 1959**

Year	Popula- tion	Labour Force	Employ- ment	Primary Resource Employment				Manufacturing Employment Originating from:				Primary plus Secondary Total
				Agric.	Forestry	Fishing and Trapping	Sub Total	Canadian Farm	Forest	Fishing and Trapping	Sub Total	
<i>Canada</i>												
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1959 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Atlantic</i>												
1949 .....	11.7	9.0	8.7	7.7	23.2	69.2	10.0	4.8	10.5	40.0	9.0	9.7
1959 .....	10.6	8.9	8.4	8.1	26.6	53.3	11.1	3.9	6.9	50.0	7.0	9.4
<i>Quebec</i>												
1949 .....	28.9	28.0	27.9	22.5	39.1	7.7	23.1	42.7	30.9	25.0	36.3	27.2
1959 .....	28.7	28.1	27.5	22.3	34.1	6.7	23.5	35.9	30.6	22.2	32.7	27.2
<i>Ontario</i>												
1949 .....	52.6	35.7	35.9	26.3	20.3	7.7	25.5	38.3	34.0	15.0	35.3	28.5
1959 .....	34.1	36.8	37.4	25.1	13.8	6.7	23.5	42.6	36.1	5.6	38.1	29.5
<i>Prairies</i>												
1949 .....	18.4	18.7	18.9	40.1	1.5	3.9	37.0	9.7	6.2	5.0	7.8	28.0
1959 .....	17.4	17.2	17.7	41.0	2.1	13.3	36.0	12.1	7.3	5.6	9.4	25.0
<i>British Columbia</i>												
1949 .....	8.4	8.6	8.5	3.4	15.9	11.5	4.4	4.5	18.4	15.0	11.6	6.6
1959 .....	9.2	9.0	9.0	3.5	23.4	20.0	6.1	5.5	19.1	16.6	12.8	8.9

#### 4. Income from renewable resource production

While the National Accounts of Canada do not provide a geographical breakdown for industrial production, the Annual Survey of Production carried out by the Dominion Bureau of Statistics provides net value of production data both on an industry and provincial basis<sup>4</sup>. Through these estimates it is possible to trace the economic importance of both the primary and secondary sectors of agriculture, forestry, fishing and trapping in Canada, and within the five regions being analyzed in this paper.

Comparing these four industries with one another in Canada as a whole; agriculture and forestry, of course, dwarf the other two industries in economic importance. In 1959, for example, the primary and

secondary sectors of agriculture accounted for 70 per cent of the total employment and 56 per cent of the net value of production in these industries. Forestry accounted for 28 per cent of total employment and 41 per cent of the net value of production in the four industries.

Net value of production<sup>5</sup> estimates show that in 1949, primary and secondary production in the above four industries accounted for 45 per cent of total

<sup>4</sup> Value of commodity production estimates by province exclude the non-commodity producing industries and are not conceptually comparable to National Accounts estimates.

<sup>5</sup> Equals total value of output, less indirect taxes, cost of materials, fuel, purchased electricity and processed supplies consumed in the production process.

**Table 3. Changes in Employment in the Primary and Secondary Sectors of the Agricultural, Forestry, Fishing and Trapping Industries Compared with Employment in All Industries, Canada and Regions, 1949 to 1959**

	Year	Canada	Atlantic <sup>(a)</sup>	Quebec	Ontario	Prairies	British Columbia <sup>(b)</sup>
			(annual averages in thousands of persons)				
Primary sector.....	1949	1,172	117	271	299	434	51
	1959	801	89	187	188	288	49
Secondary sector <sup>(c)</sup> .....	1949	524	47	190	185	41	61
	1959	562	39	184	214	53	72
Primary plus secondary.....	1949	1,696	164	461	484	475	112
	1959	1,363	128	371	402	341	121
All industries.....	1949	4,913	429	1,369	1,766	929	420
	1959	5,855	493	1,613	2,187	1,036	526
			(percentage change from 1949-59)				
Primary sector.....		-32	-24	-31	-37	-34	-4
Secondary sector.....		+7	-17	-3	+16	+29	+18
Primary plus secondary.....		-20	-22	-20	-17	-28	+8
All industries.....		+19	+15	+18	+24	+12	+25

Source: Dominion Bureau of Statistics, Labour Force Surveys and Manufacturing Industries of Canada.

<sup>(a)</sup> Includes Newfoundland.<sup>(b)</sup> Includes Yukon and Northwest Territories.<sup>(c)</sup> Includes employment in the manufacturing of Canadian products of farm, forest, fishing and wildlife origin.**Table 4. Annual Averages of Employment in Canada, by Industry, 1949 and 1959**

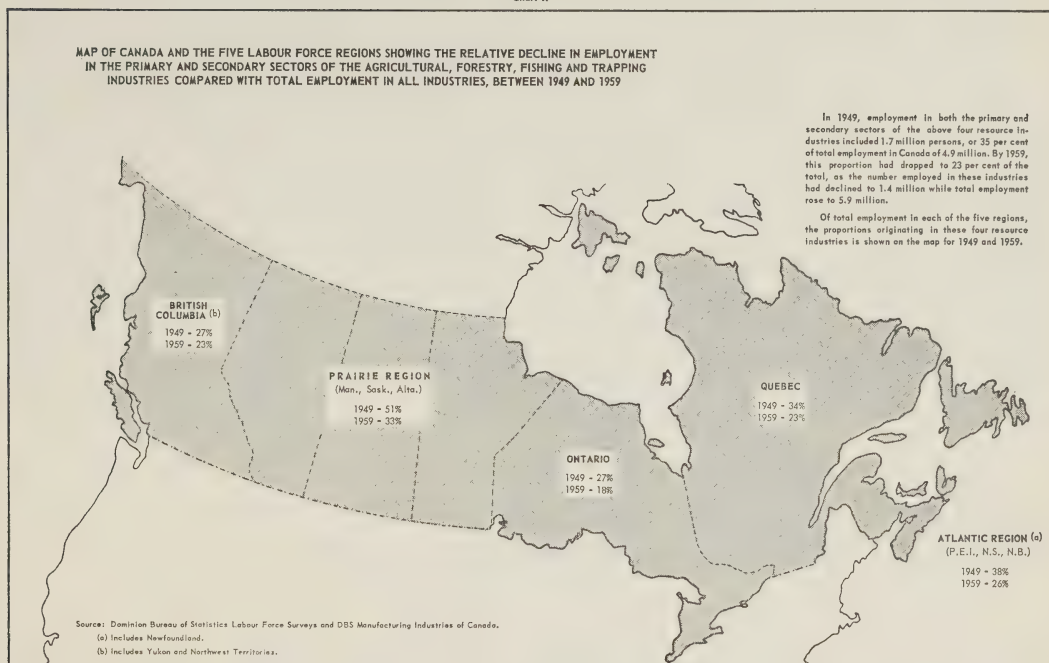
	Thousands of Persons		Percentage Distribution	
	1949 <sup>(a)</sup>	1959	1949	1959
Primary plus secondary renewable resources <sup>(b)</sup> .....	1,696	1,363	34.5	23.3
Mining.....	84	88	1.7	1.5
Other manufacturing.....	778	932	15.9	15.9
Construction.....	317	442	6.4	7.5
Transportation.....	364	445	7.4	7.6
Public Utilities.....	45	75	0.9	1.3
Trade.....	646	946	13.2	16.2
Finance.....	144	216	2.9	3.7
Service.....	839	1,348	17.1	23.0
Total.....	4,913 <sup>(a)</sup>	5,855	100.0	100.0

Source: DBS Labour Force Surveys and Table 2.

<sup>(a)</sup> Excludes Newfoundland.<sup>(b)</sup> Includes, Agriculture, Forestry, Fishing and Trapping.



Chart II



commodity production in Canada. In 1959, the comparable value of these industries amounted to 35 per cent of the total (Table 5 and Chart III). This again, indicates a relative decline in these industries versus other industries in Canada and again the decline was greater in the primary sector. In 1949, the net value of products in the primary sector of agriculture, forestry, fishing and trapping accounted for 48 per cent of the total of \$4.4 billion produced in both the primary and secondary sectors. By 1959, however, the primary sector only accounted for 38 per cent of the total production of \$6.6 billion in the four industries.

In the five Canadian regions, the economic importance of these resource industries varies quite a bit. In British Columbia the primary and secondary sectors of these industries still accounted for 50 per cent of total net value of commodity production in

that area in 1959. In the Prairie Region the comparable figure was 42 per cent, and in the Atlantic Region it was 41 per cent. In Ontario the value of production in these industries, although higher in absolute terms than in any other region, accounted for only 28 per cent of the total value of all commodity production in the province in 1959.

As with employment, there was very little shift in the regional distribution of product values in these resource industries. In both 1949 and 1959, production in these four industries in Ontario accounted for about 33 to 34 per cent of the Canadian total (Table 5(a)). Quebec accounted for about 26 per cent, the Prairie Region 20 to 23 per cent, British Columbia 11 to 14 per cent and the Atlantic Region about 6 to 7 per cent.

In addition to the value of production originating from primary and secondary sectors of agriculture.

**Table 5. Net Value of Production in Primary and Secondary Renewable Resource Industries in Relation to Total Value of Commodity Production in Canada and the Five Labour Force Regions, 1949 and 1959**

Year	Primary Resource Production					Manufacturing Production Originating from:					(1) Total Primary plus Secondary	(2) Total Production All Industries	Per Cent Column (1) of (2)
	Agric. <sup>(a)</sup>	Forestry	Fish- eries <sup>(b)</sup>	Trap- ping	Sub Total	Can- adian Farm	Forest	Fishing	Trap- ping	Sub Total			
	(net value of production in millions of dollars)												
Canada													
1949.....	1,652	372	78	15	2,117	1,041	1,158	41	29	2,269	4,386	9,695	45
1959.....	1,839	597	105	10	2,551	1,868	2,146	55	30	4,099	6,650	18,828	35
Atlantic													
1949.....	72	53	37	1	163	42	91	21	1	155	318	594	54
1959.....	72	57	55	*	184	61	134	29	*	224	408	984	41
Quebec													
1949.....	239	119	3	2	363	386	366	1	9	762	1,125	2,538	44
1959.....	277	173	4	2	456	598	643	2	17	1,260	1,716	4,817	36
Ontario													
1949.....	453	75	6	4	538	444	427	*	15	886	1,424	4,010	36
1959.....	512	109	5	3	629	854	780	—	9	1,643	2,272	7,990	28
Prairies													
1949.....	818	13	4	6	841	115	70	*	2	187	1,028	1,643	63
1959.....	892	26	6	4	928	252	139	—	3	394	1,322	3,174	42
British Columbia													
1949.....	70	112	28	2	212	54	204	19	2	279	491	910	54
1959.....	86	232	35	1	354	103	450	24	1	578	932	1,863	50

SOURCE: DBS Survey of Production and DBS Manufacturing Industries of Canada.

<sup>(a)</sup> Excluding agriculture in Newfoundland.<sup>(b)</sup> Includes an estimated value of \$10 million for Newfoundland in 1949.

\* Less than one million.

**Table 5(a). Percentage Distribution of Net Production Values in Primary and Secondary Renewable Resource Industries in Canada and Within the Five Labour Force Regions, 1949 and 1959**

Year	Primary Resource Production					Origin of Secondary Resource Production					Total Primary plus Secondary	Total Production All Industries
	Agric.	Forestry	Fisheries	Trapping	Sub Total	Canadian Farm	Forest	Fishing	Trapping	Sub Total		
Canada												
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1959 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Atlantic												
1949 .....	4.4	14.2	47.4	6.7	7.7	4.0	7.9	51.2	3.5	6.8	7.3	6.1
1959 .....	3.9	9.5	52.4	*	7.2	3.3	6.2	52.7	*	5.5	6.1	5.2
Quebec												
1949 .....	14.5	32.0	3.9	13.3	17.2	37.1	31.6	2.4	31.0	33.6	25.6	26.2
1959 .....	15.1	29.0	3.8	20.0	17.9	32.0	30.0	3.7	56.7	30.7	25.8	25.6
Ontario												
1949 .....	27.4	20.2	7.7	26.7	25.4	42.7	36.9	*	51.7	39.0	32.5	41.4
1959 .....	27.8	18.3	4.8	30.0	24.6	45.7	36.3	—	30.0	40.1	34.2	42.4
Prairies												
1949 .....	49.5	3.5	5.1	40.0	39.7	11.0	6.0	*	6.9	8.3	23.4	16.9
1959 .....	48.5	4.4	5.7	40.0	36.4	13.5	6.5	—	10.0	9.6	19.9	16.9
British Columbia												
1949 .....	4.2	30.1	35.9	13.3	10.0	5.2	17.6	46.4	6.9	12.3	11.2	9.4
1959 .....	4.7	38.8	33.3	10.0	13.9	5.5	21.0	43.6	3.3	14.1	14.0	9.9

\* Less than one per cent.

forestry, fishing and trapping industries, one should add the value contributed by the electric power industry which in Canada is predominantly from water and therefore also a renewable resource product. In 1959, the net value of production in the electric power industry in Canada was \$748 million or about 4 per cent of total commodity production in net value terms. This, plus the 35 per cent of total production accounted for by the other four resource industries, pushes the production figure for renewable resources well up toward 40 per cent of the total.

As I have already mentioned in connection with employment, an additional part of total commodity production originates from these renewable resource industries but loses its identity in the manufacturing of goods of mixed origin content. It is possible that the four resources of agriculture, forestry, fishing and trapping contribute an additional 2 per cent or so of total commodity production which cannot be definitely tagged as originating from these industries.

A rough estimate of the contribution of these renewable resources with the exception of recreation,

to gross domestic product in Canada for 1959 is made in the following summary:

	Millions of dollars
Primary agriculture.....	1,674
Primary forestry.....	362
Primary fishing and trapping.....	105
Secondary agriculture, forestry, fishing and trapping.....	3,290 <sup>a</sup>
Electric power, gas <sup>7</sup> , and water utilities.....	1,001
Sub-Total.....	6,432
Total gross domestic product.....	31,293 <sup>a</sup>
Per cent of G.D.P. contributed by renewable resources.....	21%





<sup>a</sup> This estimate was obtained by applying the percentage of net value of production in manufacturing originating from agriculture, forestry, fishing and trapping products to the total gross domestic product for all manufacturing.

<sup>7</sup> Includes gas distribution only.

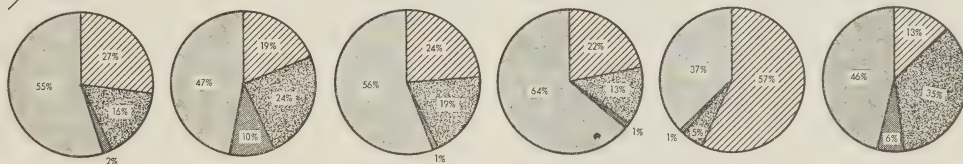
<sup>a</sup> DBS National Accounts, 1960.

Chart III

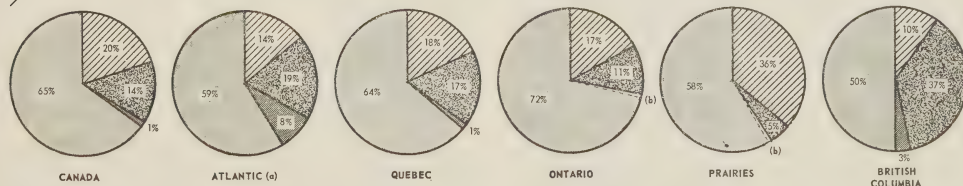
PERCENTAGE OF NET VALUE OF COMMODITY PRODUCTION IN ALL INDUSTRIES  
PRODUCED IN THE PRIMARY AND SECONDARY SECTORS OF AGRICULTURE, FORESTRY, FISHERIES AND TRAPPING,  
CANADA AND REGIONS IN 1949 AND 1959

 Agriculture
  Forestry
  Fishing and Trapping
  Other Industries

1949



1959



Sources: Dominion Bureau of Statistics Survey of Production, and DBS Manufacturing Industries of Canada.

(a) Excludes Agriculture in Newfoundland.

(b) Fishing and trapping shows less than one per cent.



### 5. *Data for water resources and recreation*

With the exception of information on value of production for the electric power industry, already mentioned above, there is very little economic data available on employment and income originating from water resources and recreation.

As far as tourism is concerned, although statistics showed that foreign visitors spent \$420 million in Canada in 1960<sup>9</sup>, it has been estimated that Canadians themselves are the most important tourist customers and that they comprise between 80 and 93 per cent of the travelling public on highways in Canada<sup>10</sup>. Consequently, there is a need for a national survey of domestic travel to determine expenditures on recreation by our own nationals.

Other sources of data are the statistics on the numbers of provincial and federal government employees engaged in recreational and cultural service functions<sup>11</sup>. In May 1961, there were about 2,300 persons employed by provincial and federal governments in Canada to administer governmental services in this area.

Apart from the above and a recording of the numbers of fishing and hunting licences, we have virtually no national statistics on the over-all effects of recreation on employment and income in Canada.

### *Characteristics of labor in areas affected by longer-term declines in employment*

#### 1. *The low skill level of people in surplus manpower areas*

In a country in which the movement out of primary to secondary and tertiary industries has been taking place quickly, there is a need for considerable adjustment in the levels of education and skill of the labor force. In the past 60 years in Canada, employment in the primary renewable resource industries has declined from over 40 per cent of total employment in all industries to about 15 per cent<sup>12</sup>.

In addition to the adjustments required in education and skill levels, a shift away from dependence on primary industries, which offer employment mainly to men, necessitates an adjustment in the male-female ratio in the labor force and, in actual fact, renders it more difficult for men to find employment than was the case formerly.

Perhaps the most important thing to bear in mind, however, is that the structural shifts in employment

between industries is occurring so rapidly that within one generation, individuals in the labor force must adjust to meet quite different skill and educational requirements.

Another important adjustment is required when people in primary industries, such as farming, move from self-employed or unpaid employment to paid jobs.

As far as shifts from primary to secondary industrial employment are concerned, these also very often require movements of people from one area to another, ordinarily from rural to urban areas. Because these adjustments in skill, education and physical mobility do not occur automatically to meet shifts in industrial employment, we have problems of surplus manpower at present in some areas in Canada.

A recent study<sup>13</sup> found that unskilled persons constituted a high proportion of the total number of persons registering for jobs at National Employment Service offices in labor surplus areas. This study classified 18 National Employment Labour Market Areas as having a labor surplus over the period 1953 to 1959. Seven of these areas were located in the Atlantic Provinces, 8 in Quebec, 2 in Ontario and 1 in British Columbia. Unskilled labor registration accounted for 21 to 45 per cent of the total monthly registrations of males within these 18 surplus-labor areas.

In 9 labor market areas in the Maritimes and Quebec, the study concluded that the dependence on a relatively few primary industries that are seasonal in nature accounted for the major part of unemployment in these areas.

This study also revealed that unskilled labor registration constituted a higher proportion of total monthly registrations in metropolitan and industrial labor surplus areas than in agricultural and smaller labor market areas<sup>14</sup>. This finding seems logical enough because people working in areas that are more dependent on primary industries often do not need the higher skills that are required in industrial and metropolitan areas. When people attempt to move from primary industry jobs to those requiring more skill, however, they frequently become unemployed.

#### 2. *Education*

Census of Canada data show conclusively that residents of farm and rural areas have not achieved the educational levels obtained by those living in urban areas<sup>15</sup>. The census of the labor force in 1951 showed

<sup>9</sup> DBS, *Travel between Canada and Other Countries, 1960*.  
<sup>10</sup> Crombie, H. L. *Tourism in Relation to Natural Resources, Resources for Tomorrow*, Vol. 2, p. 977. Queen's Printer, Ottawa, 1961.

<sup>11</sup> See, Provincial Government Employment and Federal Government Employment, published quarterly and monthly by the Dominion Bureau of Statistics.

<sup>12</sup> In the primary sector of agriculture, forestry, fishing and trapping, employment was only 13 per cent of the total in Canada in 1960.

<sup>13</sup> Judek, S. Canada's Persistent Unemployment Problem, Labor Surplus Market Areas. Proceedings of the Special Committee of the Senate of Canada on Manpower and Employment, February 1961.

<sup>14</sup> NES Labour Market Areas with a labor force of 10,000 to 25,000 are called minor labor market areas by the Department of Labour.

<sup>15</sup> Census of Canada, 1951, Vol. 1, Table 59.

that the percentage of males with 9 years or more of schooling was lower in the agricultural, forestry, fishing and trapping industries than in all other industries<sup>16</sup>. In the fishing and trapping industries only 17 per cent of male workers aged 14 and over had received 9 years or more of schooling. In the forestry industry the corresponding proportion of males was 20 per cent, and in the farm labor force it was 24 per cent. In the service industries, on the other hand, 65 per cent of the males had the equivalent education. Even in the construction industry 36 per cent of the men had received 9 years or more of schooling.

In household sample surveys made by federal and provincial Departments of Labour in two labor surplus areas in the Maritime Provinces in 1960<sup>17</sup>, it was found in one area that, among men experiencing unemployment, only 16 per cent of those aged 14 and over had completed grade 9 or better in school. Ten per cent of these men had no formal education at all and an additional 33 per cent had gone only as far as grade 5.

### 3. Seasonality of resource industries in these areas

Seasonal variations in industrial employment should be considered separately from the longer-term annual trends in resource industries. Yet, indirectly, seasonality in these industries is probably a contributing factor to the secular downward trend in employment, because of the less attractive income prospects in industries of a highly seasonal nature.

Comparisons of seasonal amplitudes of employment in Canadian industries show that the industries that give rise to the largest seasonal variations in employment are logging, fishing, agriculture and construction<sup>18</sup>. Seasonality is also induced in the industries that process the products or supply these seasonal industries with goods and services. This amplifying effect of seasonability results in large seasonal variations in employment in regions which are more dependent on primary resource industries.

In one of the labor surplus areas included in the household survey in the Maritimes, 45 per cent of the men interviewed had experienced unemployment for one month or more over a two-year period. About 70 per cent of these men gave their main occupations as fishermen, carpenters, loggers, truck drivers and unskilled laborers.

As far as seasonality in Canada as a whole is concerned, our research work indicates that, during the years 1958 to 1960, the construction industry, the group of primary industries<sup>19</sup> and transportation ac-

counted for about 70 per cent of the total number of seasonally unemployed people in Canada<sup>20</sup>.

### *Union organization, wages and working conditions in resource industries*

There is only sufficient time in this paper to raise a few points about the extent of union organization, wages and working conditions in these resource industries, as indications of the way in which workers in these industries are organized and the nature of the economic position in which they find themselves. For these four primary resource industries less than 10 per cent of the workers are union members. Union organization is confined to the forestry and fishing industries where some 60,000 workers are union members, a little more than half the total work force in these industries.

In the manufacturing industries which process these resource products, some industries are very highly organized. This is particularly true of the pulp and paper industry in which approximately 90 per cent of the employees are now covered by collective bargaining agreements. Available data indicate that in the food, textile and the printing and publishing industries more than one-half of all employees are covered by collective agreements. Altogether, over 200,000 workers in the secondary sector of the four resource industries are members of unions.

Wages and working conditions in the secondary manufacturing sector dependent on the resource industries are generally comparable with those in other parts of manufacturing. When one looks at these four resource industries in the primary sector, however, one finds a situation that contrasts greatly with the manufacturing sector of our economy, so far as paid workers are concerned. Wages and working conditions in these industries vary a good deal, not only from industry to industry, but also from region to region. As a generalization, however, it can be said that wages are lower, working conditions are less progressive, and hours of work are much longer than in the manufacturing part of our economy.

The basic factor responsible for these conditions in the four resource industries is that the *average* output per worker is much lower than in the secondary sector of the economy. A comparison of the gross domestic product originating from primary agriculture, forestry, fishing and trapping with the gross product in other industries indicates that output per worker in these primary industries is still considerably lower than in other industries. In 1960 the gross domestic product per worker in the country as a whole was \$5,400. For the four resource industries covered, the figure was \$2,800, or not much more than 50 per cent of the average for all industries. For

<sup>16</sup> Census of Canada, 1951, Vol. IV, Table 19.

<sup>17</sup> Joint Federal-Provincial Surveys of Seasonal Unemployment in New Brunswick and Nova Scotia, 1960. The report on this survey has not yet been published.

<sup>18</sup> Seasonal Unemployment in Canada, *The Labour Gazette*, Department of Labour, Ottawa, Queen's Printer, 1960.

<sup>19</sup> Including mining, but seasonal variation in employment in this industry is very small.

<sup>20</sup> Seasonal Unemployment in Canada, Department of Labour, Ottawa, 1960.



primary agriculture the figure was \$2,600 and for forestry \$3,700.

This relatively low real product per worker in these industries is a severely limiting context for the past and future development of human resources associated with these industries.

#### *Implications of renewable resource development*

##### *1. For income growth*

It is probable that the relative decline in the contribution of renewable resource industries to national income will continue. As far as these primary resource industries are concerned, together they accounted for about 13 per cent of gross domestic product in Canada from 1930 to 1950 and then suddenly declined to 7 per cent of gross domestic product in 1960, partly because of the mushroom growth of the trade and service sectors of the Canadian economy. This gives some conception of the rapid shifts occurring in the industrial pattern of the economy since World War II. The proportionate contribution of these industries to our national product is not likely to change too much in the future. Primary and secondary production from renewable resource industries as a whole may continue to supply something in the order of 15 to 20 per cent of the gross domestic product for some years to come.

##### *2. For employment and the more effective utilization of manpower*

Again, in the case of employment, it is likely that these four primary resource industries will provide a smaller proportion of total employment in future. The farm labor force, which is the largest of these industries, has already declined very sharply in the last two decades, so this will probably result in a very considerable slowing down in the over-all pace of employment decline in these industries.

As far as recreation and wildlife activities are concerned, there is little doubt that they will provide more employment and income as living standards and leisure time increase in Canada.

The manufacturing industries based on resource industries will probably show some further increase in employment as the growing population in Canada requires more food and clothing and more wood and paper products.

To provide for a more effective utilization of manpower in Canada and particularly in this group of industries, it will be necessary to do everything possible to make use of the surplus labor available in areas associated with these industries. We will need to develop, more consciously, ways and means of facilitating the adjustment required on the part of many people who have not been able to adapt their education and skills to the rapid changes in our re-

quirements for manpower. As in the past, that part of the Canadian population most dependent on primary industries will probably continue to have a higher birth rate than other population groups. This underlines the point that human resources are a *renewable* resource. Therefore, a continued shift of surplus labor from our primary industries will be required for a more effective utilization of manpower in the Canadian economy.

##### *3. Training of manpower resources*

Since people in the lowest education and skill levels are the ones most likely to encounter difficulty in finding and holding jobs, education and training are the essential remedial measures required for the most effective use of manpower.

It is paradoxical that Canada has many job openings in the midst of unemployment, because many people do not have the necessary training to equip themselves for these openings.

Canada is now greatly expanding its resources devoted to education and technical vocational training. This is necessary because of the rapidly expanding requirements of our economy for skilled, technical and professional workers. The needs of these resource industries for more highly skilled and specialized workers will grow as well if they are to increase their productivity as a means of improving the economic status of their workers. This means, in turn, that improved educational and training facilities must be developed in those rural and fringe areas in which the workers and their families in these industries live.

##### *4. The need for more research on resource industry*

Along with the need for training and education there is a greater need for research on manpower and other economic and social requirements in the changing complex of industry today. I might mention that we have a great deal more manpower research to do in Canada, as underlined by the report of the Senate Manpower Committee. Our national household surveys of the labor force were started only in 1946, at least twenty years after the enlargement of records in such economic areas as primary and manufacturing industry production and national income accounting. With this late start, there are numerous gaps in manpower statistics, and emerging requirements that have not yet been met.

Due to the exceptionally high seasonality in employment in primary industries there is a very great need for statistical data on the continuity of employment. We also need more information on the emerging skills required in primary industry. In farming, for example, there is as yet no cataloguing of the types of skill that workers in the industry possess.



Yet, it is clear that farming operations are becoming more and more technical today. As a matter of fact, present statistics do not even provide information as to the number of people who are employed the year-round in farming.

Such gaps in data on manpower, of course, are a result of the preoccupation on the needs for research on the demand, or industry, side of the labor market. For too long the economic concern in Canada has been toward the encouragement and development of industries, with the misconception that the labor force would automatically adjust to new employment needs.

**Panelist (Mr. ROBERTS)**

The position of the renewable resource industries in the changing pattern of employment in Canada has been amply described by Mr. Dymond. In primary operations, the picture in recent years has been one of actual diminution in the amount of manpower employed while in the related processing activities employment has been approximately stable. Employment in the renewable resource area as a whole has constituted a distinctly declining proportion of Canada's total labor force. Incumbent upon this situation is the problem of retraining and redirecting human resources, which has been dealt with in the main paper.

It should be recognized, nevertheless, that the capacity of the renewable resource industries to absorb manpower is not by itself an adequate criterion either of the general health of these industries nor of their over-all contribution to economic development. In any progressive society, as incomes grow, food and forest products are among those which attract a declining proportion of the consumer dollar. For this reason alone one would expect these industries to require a declining proportion of the total productive resources available. Moreover, in recent years technological advance has been unusually rapid in this area, permitting more output with less labor. This tendency reduces the manpower requirements of an industry while enhancing its competitive strength and wealth-creating capacity. This process is generally in line with national economic objectives.

The key significance of renewable resource industries to the Canadian economy cannot perhaps be fully appreciated without reference to their historical role in the development of the country. Over the years the opening up of new land, with development of forest and water resources, and mineral wealth, has to a large degree spearheaded the general growth of the economy. Even prior to the advent of settlement Canada was known throughout the world as a prolific source of fish and furs. From these early beginnings it was primarily the pull of virgin lands, forests and other resources that sparked successive waves of settlement which gave definite shape to the

Canadian nation. Resource extraction led naturally to processing, while the course of settlement and further population growth gradually gave rise to the superstructure of secondary and service industries which exist today. In terms of employment and income creation, these secondary activities now greatly outweigh the originating "hard core" primary industries. Renewable resource activities and related processing industries now account for approximately one-fifth of Canada's employed labor force and generate a somewhat smaller proportion of total income.

Apart from their historical "lead" role, resource industries possess another attribute which gives them a significance far out of proportion to their actual size. I refer here to the predominance of resource commodities in our export trade. Resource-based products including minerals and bulk chemicals make up nearly nine-tenths of Canada's exports, while renewable resource products alone account for more than one-half of the same total. In fact, four commodities within this group, namely newsprint, wheat, pulp and lumber, brought \$1.9 billion in foreign sales last year, more than one-third of Canada's total exports. Through this trade Canada is able to achieve the high degree of specialization which underlies the general productiveness of the economy and the high material well-being which Canadians enjoy. In other words, it is primarily these industries which pay our way in the world.

Foreign trade has a vital role for many nations. Yet no country of the world has achieved, primarily through trade, comparable levels of productiveness and living standards. In terms of the wealth-creating effects of its export trade and the scope of its export capabilities Canada is probably unique among the countries of the world. This particular attribute we owe to our resource industries.

If resources play such a basic role in our economy and if this is best illustrated by their importance in export trade, what does this suggest for the future development of resources? Quite clearly it indicates the necessity of maintaining maximum strength and viability in world markets. The continuing growth of production and incomes throughout the world means that the demand for resource products is expanding. However, these larger markets are not easy markets. The growth in demand has been paralleled by the creation of new production capabilities in other parts of the world. Much of this is in direct competition with Canada's export industries. Competitive pressure has increased in recent years and it is not likely to subside. If Canada is to maintain her traditionally strong position in these markets she will be required to exercise ingenuity and initiative on several fronts. At both the international conference table and that of the company boardroom, sound judgment and

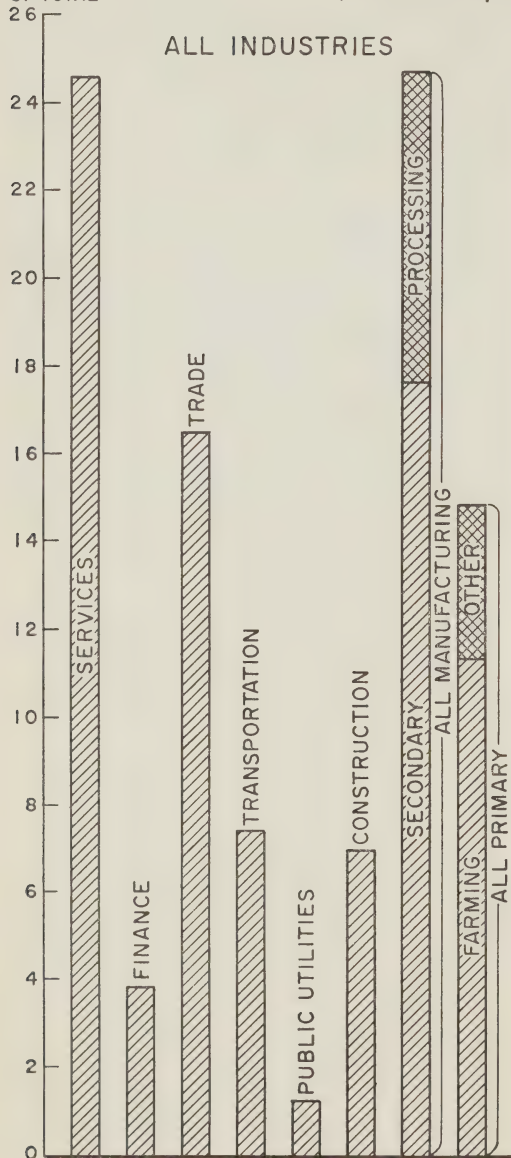
# EMPLOYED LABOUR FORCE IN CANADA

## PERCENT DISTRIBUTION IN 1960

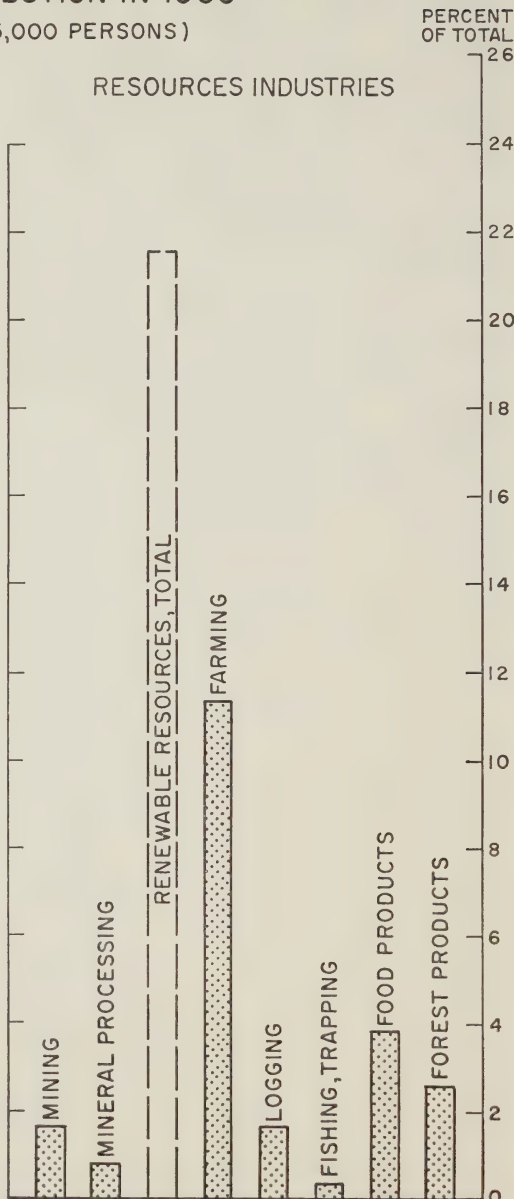
(TOTAL OF 5,955,000 PERSONS)

PERCENT  
OF TOTAL  
26

### ALL INDUSTRIES



### RESOURCES INDUSTRIES



PERCENT  
OF TOTAL  
26

hard bargaining, backed by intensive study, will be necessary to assure the best possible access to world markets. In the marketing sphere, a broader knowledge of the whole market environment and the position of Canadian industries within that environment must be developed and continuously updated. Likewise, relentless effort will have to be given to the areas of product development and productive efficiency.

As a means to improving our competitive strength, I would like to emphasize in particular the place of applied industrial research. This subject has already had a central role in the deliberations of this Conference. From the layman's point of view, I would like to emphasize the importance of more research in achieving our objectives in world trade. Research has always been important but its application on an even broader basis is becoming increasingly necessary. But in addition to the pure research and basic research carried on by universities, governments and other institutions, there is a great need for much more applied industrial research, if our products are to compete successfully in foreign or even in our domestic markets. Over the years on a number of occasions Canadian scientists have uncovered bits of knowledge with apparently useful industrial applications only to see them ignored by Canadian industry and later developed successfully by industries in other countries. Although we wish to share our knowledge with the world we should see to it that we make full use of that which originates in our own laboratories.

A comment by Dr. E. W. R. Steacie, President of the National Research Council, is appropriate here.

In view of the highly competitive position in world trade today and the new threat of Soviet industries to our export markets, it is important that Canadian industry be backed by an industrial research effort of as great a magnitude as the scientific resources of the country can support. In the past, Canadian industry has been made up mainly of branch factories dominated by parent companies which performed their research for them, or of widely scattered small industries lacking capacity for research and often lacking the technical competence to apply the results of research. Consequently, the effort put into industrial research in Canada has been small compared to that in the major industrialized countries. Recently there has been an encouraging growth in industrial research and increased realization of the importance of research for the health of Canadian industry. The importance placed on science and technology in the Soviet Union, and the successful effort of the European countries to increase the productivity of their industries by the rapid application of technical advances leave Canada no choice but to give con-

siderable emphasis to technical progress . . . One thing is certain: Canadian industries cannot afford to be less effectively served by research than their competitors in other countries.

On the other hand there is ample evidence in the story of Canada's renewable resource industries to encourage more widespread attention to industrial research. Particularly renowned has been the development and distribution of the various new strains of wheat and other grains, which have been the key to world markets for Western Canadian agriculture. Despite the problems and misgivings of recent years, it seems that there is still a real demand for wheat in the world. Unfortunately, although the researchers have developed early-maturing and disease resistant grains, they have not come up with a strain that will grow without any rain at all.

A number of developments in the fisheries sector including the introduction of modern fishing equipment, new processing and freezing plants and a vastly different approach to the consumer, have brought a marked change to the organization of the fishing industry, particularly in Eastern Canada. At the same time it substantially strengthened a difficult marketing position.

The application of improved techniques in water power generation and distribution has had a major impact in many sectors of the Canadian economy. Its importance in the development of newsprint capacity and the refining of metals in Canada, for example, is well recognized. The content of water power in many of Canada's major exports is very high. Without the comparatively high efficiencies created by applying the best methods to the natural water resources, these industries and their products would not exist in their present forms.

In the forest industries continual industrial research has been paramount in retaining Canada's place in international markets. One aspect has been the use of a wider range of species and size of trees and also more of each tree, leaving less residue in the forest and at the mills. Improved equipment of all types in the woods and in processing has reduced the labor required and improved the product. A number of new products have been developed to meet new demands and to meet the challenge of other industries and other countries.

This emphasis on industrial technical research is not meant to detract in the least from the continuing need for and value of fundamental or basic research. Nor is it intended to overlook the attention given in the workshops of this Conference to investigations into better methods of management and administration at all levels and to improved co-ordination among the various users of resources and to the means of disseminating knowledge both for the specialist and



for the public. Indeed, with our dependence on trade we must couple with industrial research the requirement in many sectors of both government and industry for extension of our studies of the present and future market situation, and also for further investigation of the important factors of production other than the resources themselves. Mr. Dymond has referred to gaps in our knowledge of the human element and I understand that another group is today discussing the question of capital requirements.

Industrial research may have less impact in some resource sectors but any reference to co-ordination and administrative problems bring to the fore questions of the multiple uses of water and land and the whole field of wildlife and wilderness conservation and the related industries of recreation and tourism. Canada's potential in these directions both for Canadians at home and visitors from abroad is only now becoming apparent. Aside from the intrinsic values to be conserved, we have here one of our real "growth industries"—a real "sleeper."

Given proper attention on all fronts, there is every reason to believe that the renewable resource industries will make a major contribution toward the achievement of higher levels of productive activity in the Canadian economy. The two-thirds increase in the volume of Canada's export of forest products to the United States in the five years following World War II illustrates the kind of impact which can flow from all-out expansion in a major industrial area of the world. Overseas industrial countries are now in a similar period of growth and the implications for some of Canada's resource products could be impressive. There are, of course, other possibilities which are quite unpredictable. Who for example could have foreseen this year's grain movement to the Pacific region?

Regardless of the particular trend of foreign market developments, the role of renewable resource industries in Canada's future development will probably remain a highly specialized one. Even under the most favorable circumstances it is unlikely that these industries will, themselves, have a major part to play in the absorption of additional manpower. In fact, the continuation in these industries of a rapid rate of productivity improvement may be a prerequisite of success in capturing additional foreign markets. In this event substantially higher production and exports may be realized, but with little direct use of additional manpower. Nevertheless, the indirect contribution to Canada's employment problem could be substantial. Higher exports could add to income levels and at the same time strengthen Canada's external financial position, both of which are essential prerequisites to a healthy and expanding economy. By bolstering up the foundations of the economy, strong resource industries will facilitate the creation of new

job opportunities throughout the whole structure of Canadian industry.

**Panelist (Mr. LAMONTAGNE)\***

The remarks I have to make this afternoon are quite similar to those that were just made by Mr. Roberts, in spite of the fact that his text has undoubtedly been submitted to ministerial censorship.

The use of natural resources has been a dominant factor of the whole economic background of Canada. By adding the technological factor and the factor of access to foreign markets, we may discern not only of the pattern but also the trend of our national industrial development. It is precisely this trilogy which characterizes our economic background and differentiates it from that of almost all other countries.

Up to the beginning of the nineteenth century, our economic development was very slow, but to the extent that development occurred, our main sources of income and employment were fisheries and wildlife, the products of which were exported to European markets. In the first half of the nineteenth century, our development proceeded at a much quicker pace. The technology was then relatively beneficial to us and we had free access to the English market. Agriculture and forestry operations were quickly expanding in Eastern Canada. Lumber, wheat and flour became our main exports. After 1850, and up to the end of the nineteenth century, the Canadian economy went through a long period of stagnation.

The first great industrial revolution based on coal and steel was not propitious to the development of available resources. Free trade in Great Britain and protectionism in the United States crippled our export trade. The Canadian economy attempted to create its own dynamism by creating, through Confederation, a larger domestic market, and by increasing customs protection and adjusting to the new technology. This was the period when railways were built, and steel and textile industries established, the raw materials of which were imported. In short, the second half of the nineteenth century was a period of artificial expansion based on the development of a domestic market rather than on the use of natural resources. It was also a period of stagnation, since in a country where industrial development was in a way supposed to precede peopling, the development of a domestic market alone could not give the Canadian economy the required momentum. Consequently, it was a period of chronic unemployment which was lessened, or solved if you prefer, by a heavy migration to the United States. Since the beginning of the twentieth century until recent years, Canada has experienced the most rapid period of economic development of its history. Wheat-growing became

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\*Translated from French.

technically possible in Western Canada; new and abundant resources were discovered in the northern regions.

The second industrial revolution, based on new sources of energy and on substitutes for steel, have resulted in a technology favorable to our resources. Finally, foreign markets in need of our products, especially the American market, considerably increased their demands and also became more accessible. Wheat and lumber, along with the paper industry, became, as a century before, the typical products of the Canadian economy. Hydroelectric power appeared as an important factor in the location of industries. The new domestic industries proceeding from the second technological revolution, such as the automobile and the electric appliances industries, contributed to the economic momentum. Finally, the mining industry made great strides, especially after the Second World War. At that time, our country was expanding more rapidly than any in the world.

This historic sketch leads us to very important conclusions. First, one must recognize that the development of our resources has always been the main basis for increased income and employment in our country. Their development trend has in some way determined the rate of our entire expansion, and our other industrial sectors, including secondary manufacturing, have played a passive part since they submitted to growth rather than achieving it. It should also be recognized (and this, in my opinion, is the second conclusion that emerges from our economic history) that development of our resources is not autonomous. On the contrary, it is determined by technology and development of our foreign markets. Thus, the great fluctuations of the Canadian economy finally depend on the technological climate and the condition of world markets. This second statement is particularly significant when explaining economic conditions in recent years.

It has often been repeated that Canada had a brilliant future because of its abundant and varied natural resources; but this abundance does not necessarily mean wealth and prosperity. It is not enough to speed up the development of our resources; it is also necessary to sell their products. It is precisely this difficulty which seems to be the source of the present economic stagnation. First, let us quote some statistics. From 1950 to 1956, our gross national product in constant dollars increased an average of over 6 per cent per year, compared to 1.5 per cent since 1957. During this last period, this same gross national product, in constant dollars, has decreased by some 5 per cent on a per capita basis. Since 1957, our exports have increased at almost the same pace as our national product. Finally, during the same period, investment by private industry has dropped off by almost 25 per cent. The decline in the resources sector and our traditional exports has been more pronounced.

What can be inferred from such facts? First, obviously, that our economy is weak and that our export trade is no longer a development factor. Moreover, our industries are no longer in a position to meet the demand while reducing their investment—and therefore their development. It seems that in the present condition of technology and world markets, the development of our resources and their dependent industries has come to maturity. If this is the case, our economic growth will be slower and the standard of living as well as income and employment levels will unavoidably reflect this, if we refuse to make the necessary adjustments.

Thus, the present conditions are somewhat similar to those of the second half of the nineteenth century, except that our resources are now more diversified and the technological climate is more propitious. But now as a century ago, our foreign markets are threatened. At that time we reacted by standing more aloof from the rest of the world and by intensifying our protectionism. And this is what the Canadian trade policy has attempted to do during the past few years. However, this is not the time to adopt Macdonald's isolation policy, when important trade coalitions are being established in the world. The development of our resources is essential to our systematic growth. We must therefore plan resources policies aimed at integrated development which will proceed under ideal conditions of efficiency. These policies are essential, but alone are unable to ensure the rapid development on which the progress of the whole country depends. The rapid development of our resources is contingent on a policy of free trade, to ensure that our products reach foreign markets where demand exists. If we practise a policy of protectionism, we will again unavoidably experience the paradoxical condition of destitution within abundance. We will have many resources but insufficient income and employment.

#### Panelist (Mr. ARMSTRONG)

My basic thesis is that from the point of view of aggregate employment and total *money* income it matters not the least whether we emphasize resource development in this country or not. In other words with the right monetary and fiscal policy and with the appropriate trade policy we can achieve a reasonable level of employment whether we emphasize natural resources or whether we emphasize instead manufacturing or some other sector in the development of our economy.

You will notice that I talk not about resource development, but rather about *emphasis* on resource development, for regardless of what policies we adopt there will be some development of resources, and therefore some employment and income generated on



that account. Within a closed or high tariff economy we could, by subsidizing the development of resources, persuade our consumers to buy more products which use relatively more of our resources and fewer products which use less. Such a policy would be an unwarranted interference with consumer sovereignty and it is not what I have in mind when I talk about emphasis on resource development.

It seems to me that there is only one important way in which we can emphasize or de-emphasize development of our resources and that is to emphasize or de-emphasize our international trade. If we decide to become more self-sufficient and therefore to restrict our international trade, we will then surely restrict the development of our natural resources. If we decide to let trade develop naturally with a minimum of restrictions, then we will just as surely emphasize and encourage the development of our natural resources and *pari passu* employment of men in the resource-based industries. But let me repeat that total employment is *not* the issue, nor is the amount of money income. The real issue is which path gives us the greatest productivity and the highest real income.

Perhaps the issue would be clearer if I spelled out the two choices which lie before us. The first choice is to maintain our present trade policy which I gather consists of advocating that other countries lower their tariffs while we continue on an *ad hoc* basis to settle each new specific trade problem on the basis of higher tariffs and more protection for Canadian industry. I assume further that other countries inspired by our actions and not our words—and by the actions of many other countries who are pursuing similar policies—will become increasingly discouraged with the possibility of world-wide free trade and will continue to align themselves with trading blocs in which they can achieve the advantages of specialization and of large scale and of geographic and resource diversification.

If these trends and policies continue, I visualize that foreign trade will be of declining relative importance in the Canadian economy and therefore that our resource-based industries will also decline in importance.

This conclusion is based on the assumption, which I believe to be valid, that if international specialization of labor, capital and resources is permitted to work itself out in a natural way; if we concentrate on the production of goods for which we have a natural advantage and for which our productivity is greatest, we will specialize in the resource-based, capital-intensive industries.

Our second choice, it seems to me, is to become part of a larger trading area. We might form a common market with the United States or we might join the

European Common Market as an associate member. Only if we elect to join a common market will we be able to emphasize development of our natural resources.

Any appeal to let trade take its natural course in this country is usually met with the charge that such a policy would reduce us all to hewers of wood and drawers of water. This is simply not so. The majority of Canadians will continue in their present jobs as barbers, school teachers, civil servants, engineers, farmers, doctors, store clerks, railway employees, life insurance salesmen and so on. I am not even convinced that joining a trading area will not increase the amount of manufacturing and processing done in Canada. Certainly this will be true within the resource-based industries themselves. For the most part our trading partners have adopted tariff structures which discourage or prevent us from processing our own raw materials, so that we must export our resources in a raw or semi-processed form.

We would be very indignant about this wasteful and wicked practice if we did not structure our tariff in exactly the same way. However, in a common market arrangement, this irrational and uneconomic locational factor would disappear and all of our resources which lost weight in the course of processing and manufacturing would be processed right here in Canada.

And even if a freer trade arrangement did mean that the proportion of our labor force which hewed wood rose from 2.4 to 2.5 per cent and even if there was a corresponding decline in the percentage of our workers engaged in textile mills, so what? Does anyone here rank a \$4,000 a year hewer of wood below a \$3,500 a year worker in a textile mill in the vocational pecking order?

I do not propose to deal with the fascinating problem of whether we should look toward the United States or Europe. Without having studied the matter I am inclined to believe that on strictly economic grounds an associate membership with the European Common Market would be more attractive. As a layman I suspect that on cultural and political grounds this choice might be preferred by the majority of Canadians.

This, however, is a problem which requires a great deal of study—which to my knowledge it has not yet had. I would most strongly recommend to the members of every industry in Canada that they form an industry committee without delay to investigate the long-run repercussions to their industry of the two choices I have placed before you as well as the problems of transition.

Let me summarize my position in a series of bald statements, most of which I agree with.

The only way to alter significantly the rate at which



our natural resources are to be developed is to alter the relative importance of our foreign trade.

The world is becoming organized into large common markets. The United States, China, and Russia are themselves large free trade areas. Other common markets are being developed in Central and South America, in Africa and Eastern and Western Europe. I suggest that these areas will continue to grow in importance.

Canada faces the choice of joining one of these areas or of trying to "go it alone."

If we continue to increase our protection and to become more self-sufficient we will not eliminate all of our foreign trade.

On the other hand if we elect to join a common market we will not end all or even most of our manufacturing activity.

I am reasonably sure that our standard of living will be higher if we join a common market but long-term gains would have to be measured against short-run dislocations.

Only if we decide to join a common market will we fully develop our natural resources.

Only if we join a common market and thereby overcome the bias in the tariffs of our trading partners which forces us to export unprocessed materials can we hope to fully process all of our raw materials in Canada.

I recommend to governments and to industries that they undertake without delay an industry-by-industry study of the consequences of joining a common market.

In addition I recommend that a companion study be made of the consequences of not joining a larger market area.

Without attempting to prejudice the outcome of the latter study, what evidence I have seen suggests that efficient production requires a market considerably larger than that which Canada has or is likely to have in the next few decades. This being so I must conclude tentatively that a self-contained Canada would in 30 years' time have the lowest standard of living of any important country in the Western World.

I gather that most of the people assembled here today are associated in one way or another with resource-based industries. Therefore the people who have most to gain from a change in Canadian trade policy are right here in this room. If a change is to be made, you must make it. The future of Canada is in your hands.

**Panelist (Mr. ROBERTSON)**

After listening to Dr. Dymond's hard facts, there should be little doubt that the acid test of this Conference will be its effectiveness in getting the federal government in particular to look at renewable re-

sources as something more than money in the bank against the needs of the far future. Dr. Dymond's analysis suggests very strongly, indeed, the fact that new thinking about our resource industries is only a suitable starting point for action on half a hundred problems, human as well as economic, facing the Canadian nation.

The government and the public have always taken great comfort in the thought that the land and water resources of this country ensure it against economic catastrophe over the long run. Those of you who have read Professor Kuiper's remarkable paper on the Nelson River Basin must feel that Canada will be one of the few countries to successfully survive this world's population explosion—thanks to a wealth of resources. He envisages, as you may remember, the Prairie Provinces transformed into a well-watered Garden of Eden comfortably able to support 100 million people.

It is possible. It is comforting. It is also a very long way away.

Standing between the present employment of resources and the effectively, perfectly utilized resources of tomorrow, however, are a number of urgent realities.

Some may be only short-run considerations. But they all are facts of life and they do suggest that any policies in the resource field are bound to fail unless they are considered in relation to the progress of the whole economy, in relation to its efficiency, in relation to its over-all employment and income needs.

First; when talking about renewable resource industries, and policies to enlarge their contribution to employment and income, we must recognize that we are discussing declining industries. The decline, granted, is not in all its aspects absolute. It is relative. But it is dramatic.

The Gordon Commission, for example, estimated that by 1980, the proportion of the Canadian work force in resource industries including agriculture, might be only 10 per cent to 12 per cent as against the 35 to 37 per cent or so in the late 1920's. The big growth is in trade, finance, government and services. The proportion of the work force in those areas will double between 1929 and 1980, from 28 to 55 per cent.

Much the same trend is also taking place in resource industry product. Here the relative decline *vis-à-vis* other industries is entirely due to the shrinking contribution of agriculture to gross domestic production. There will still be sizeable gains in water and forest industries.

This does not deny the fact that our farms, forests, fisheries and hydro power provide the physical underpinning for our prosperity. But it does raise a few very important questions.

Are government policies which place emphasis on the maximum development of resource industries in the best national interest? Are we justified any longer in equating high production in the resource industries with high employment and high income in the economy as a whole? If employment is declining *relatively* in the resource industries, is the answer still-bigger subsidies and aids for farmers and fishermen?

Second; at the moment, we live in a world of glut. It is just realistic to admit that only war, pestilence or drought would strain the production capacity of our wheat farms and our pulp and paper forests.

The traditional idea that we must harbor our resources and practice strict conservation lest supplies run out seems curiously out-dated when you look at the competitive nature of today's international commodity markets.

Growth in the underdeveloped countries, which are now entering world markets, or meeting more of their own needs, is largely based on developing natural resources—our specialty, so far. Growth in the industrially developed countries is now being hinged more firmly to developing diversified and more self-sufficient economies by, for example, building newsprint mills to use local, fast-growing trees—again our specialty, so far.

So—just how much room is there in Canada for policies that try to encourage new resource development or better resource maintenance? Should resource policies—if they are to help maximize *national* employment and income—educate the public away from its historic fascination with resources, renewable and otherwise?

Third, and this grows out of the second point; we are, more and more, living in a world where the problems of selling take precedence over the problems of producing. The sophisticated economies of the world, among which Canada numbers, are caught up in a fundamental shift away from worries about sources of supply and toward a search for market security. Thanks to technological developments, markets, not materials—and capital, not manpower—are increasingly the main preoccupations of commodity boards and business corporations.

This is already quite evident, as Professor Anthony Scott has pointed out. Oil companies, for example, are seeking outlets by moving more aggressively into marketing and by doing research on competing forms of fuels. Wood product firms are buying into retail companies. Fishermen are buying fish processing and distribution plants. By the same token, it has been a long time since a publisher bought a newsprint firm to assure his supplies—and soon, perhaps newsprint companies will start buying newspapers to guarantee their newsprint sales.

In the light of this, can the Canadian economy afford resource policies that fail to place product re-

search ahead of land and water conservation? Can it afford, for example, to regulate forestry cutting operations, yet neglect to encourage technological improvement within the processing sector of the industry? Emphasis on research and technological advance should certainly be among the ways of winning the markets that will guarantee employment and income within the resource industries.

The fourth of the realities, which make very difficult indeed the framing of policies designed to maintain employment and income within the resource industries, is evident in Dr. Dymond's paper. These are the human problems.

For example: the spectacular decline in farm employment because of better machinery, better methods, has produced remarkable gains in productivity—but at very large social cost. Surely too many young people have been thrown out on the urban labor market undereducated and undercapitalized for the demands that the economy makes upon them.

Mr. Miller, Director of Research for this Conference makes the point:

He says: "Policy must have as its goal, not primarily maintenance of supply (or its corollaries, minimization of waste or more efficient techniques of utilization) but more importantly, maintenance of welfare for those most directly affected by the use of resources."

Given the employment and income trends outlined in our speaker's survey, is there much point in resource policy that is not all-of-a-piece with federal welfare policy, and with provincial policies of education? If, one way or another, the wastage of natural resources is minimized, or more efficient use is made of these resources, can we avoid, in the process, creating new wastage of human resources? Unless there are some very basic changes in *national* economic policies to accompany changes in renewable resource policies, what governments achieve by way of tidying up land and water may be lost through bigger unemployment—unemployment characterized by a low level of skills.

My fifth and final point is this. What the federal and provincial governments can do in the *short run and directly* to enhance employment and income in the resource industries appears to be very small, indeed. In the recent past, anyway, government has only been able to soften the unemployment effects of agricultural mechanization and, by such devices as subsidies and unemployment insurance, help keep uneconomic fisheries going a little longer.

Government activities and expenditures have been, and probably will be, centered in water resources, recreation areas and wildlife preservation—what have been called the "amenity resources" which provide only a small part of resource industry employment.

What happens in the rest and the more important sectors of the renewable resource industries is, let it be noted, primarily up to self-employed farmers, self-employed fishermen, small farm or fish factories, pulp and paper companies, sawmills—in short, private business.

In all of these privately-owned industries there has been, over recent years, marked progress in conservation or in the more effective utilization of natural resources. Government rules or financial inducements did, no doubt, speed the process. But, basically, better care of resources has come about because it was the profitable thing to do.

Are the resource policies of the near future likely to encourage the private sector of the resource industries to create high level employment, high level income conditions?

It is early, certainly, to judge Ottawa's newly announced National Resources Council. But since it was obviously planned without the benefit of this Conference's deliberations, a comment now could hardly be considered *lese majesté*.

The Council appears to be restricted in its activities to the care and nature of the government-controlled "amenity resources." It is hard to detect in its frame of reference any large or specific obligation to promote resource conservation or income and employment-generating development in the private sector.

Its objectives are constructive and useful—as far as they go. Most people like to live in a tidy house with a tidy garden, and find it to their economic advantage to do so.

But is this an adequate approach to the problem of income and employment in that sector of the renewable resource industries which provides jobs and pay checks for about one-fifth of the entire labor force?

The supply and demand situation and the employment and income realities in the renewable resource industries suggest that government policies must go far beyond straight and simple conservation because it's a "good" thing, and far beyond maintenance of industrial raw materials because there might, in some far day, be a shortage.

Resource policy is plainly only a part of the whole problem of running an economy to maximize or at least maintain employment and income—and it can't be looked upon as an area for isolated activity.

Consider how interwoven is the well-being of the

goods-producing resource industries with general government policy. Take, for example, the present government drive toward Canadianization of foreign-controlled industry. Its aim is to give Canadians bigger participation in this country's industries and to slow the torrent of U.S. capital pouring in. This is probably good, if we feel it is necessary to be our own masters, and there are many responsible people who believe that it is. But if this policy, as it develops, in any way discourages U.S. pulp and paper companies here—who control 43 per cent of the industry—it is going to be hard on employment and income in this sector of the economy.

Or look at the total impact of taxation on industry costs and industry product prices. What happens in this area will certainly shape business decisions which, in turn, will determine employment and income prospects in the resource-related companies. Canada's pulp and paper industry—which produces Canada's biggest export item—is already a high-cost industry. If its costs and prices are pushed upwards because of bigger tax loads, no array of conservation rules will save jobs and incomes in that industry.

Or consider the effect of government combines policies on the pulp and paper industry. If these laws become more stringent, if they insist upon equating bigness with badness and ignore entirely the need in Canada for every economy of scale that can be achieved, government policy in this area may well work against industry efficiency, against more effective marketing, against employment.

The employment and income problems of the resource industries, in other words, seem to reach far beyond conservation of supplies. It's likely that in the short run anyway, given a world surfeit of most resource materials, the maximization of employment and income in these industries will depend to a greater-than-usual extent on the growth of over-all Canadian prosperity and industrial efficiency necessary to bring that growth about.

The intelligent and wise use of our resources to provide jobs is very much up to private enterprise. But, let's face it, creating the climate suitable for efficient expansion in the private sector is very much up to general government policies.

These are matters of political economy and perhaps, as the saying goes, we need more economics and less politics in their solution.





*Plenary Session*

*Saturday, October 28, 1961*





# *Renewable Resources and Canada's Future*

## Plenary Session

SATURDAY, October 28

Chairman: JEAN LESSARD, President, Quebec Hydro.

Panel: DONALD M. STEPHENS, Chairman, Manitoba Hydro-Electric Board.

V. W. BLADEN, Dean of Arts and Science, University of Toronto.

F. L. MITCHELL, General Manager, Canadian Pulp and Paper Association.

T. K. SHOYAMA, Secretary, Economic Advisory and Planning Board, Government of Saskatchewan.

### Chairman (Mr. LESSARD)\*

This Conference has been described as: "Jointly sponsored by the federal and the ten provincial governments, (it) will explore possibilities for better management and development of our renewable resources. The multiple use of resources to support an adequate rate of growth in the Canadian economy will be the main focus of discussions." Speakers have engaged their governments to co-operate toward the solution of this problem, now recognized as of national scope. This has been so even though delegates knew that they were participating in discussion as individuals and not as representatives of a government, industry or university.

In other words, the future use of our renewable resources has been removed from the federal, provincial or municipal field and raised to a strictly national level because of the essential role future usage will play in the Canadian economy. If Canada wishes to maintain its status in the field of foreign export trade, for example, it is obvious that we must plan the development of our renewable resources to the greatest possible advantage of the Canadian people. This is the reason why it is more imperative now than ever that honest, marked co-ordination and co-operation must prevail not only between the various governments but also between governments and industry, between industry and labor.

We would have you recall also that we have been assured that co-operation between governments would be based on respect for the sharing of constitutional powers.

Jurisdiction raises a problem whose solution is possible only through the co-operation that the governments have promised throughout the week. Recognizing the importance of this matter, the Steering Committee has suggested that a member of this morning's round table voice his comments and, perhaps, add his suggestions about how to get this started along the right road. With your permission, we would focus your attention on a few observations pertaining to this problem.

Let us deal with agriculture. We have been told that considerable advantages are to be gained through co-operation between the Government of Canada and the governments of its provinces as far as development of agriculture resources are concerned. During the past two decades, however, the experience in this field has not been very happy in Canada. It would seem that progress in this direction is possible only if the federal government shows greater initiative.

Coincident with the increasing complexity of Canadian society and with the evolution in the economic situation and in social values, public opinion has become more and more concerned with our means of existence. Unfortunately, evolution of the legislative and administrative structure has not kept pace with economic and social conditions. The inauspicious effects of this failure to keep pace have been felt in such various ways as abandoned farms, diminishing or polluted water reserves, flooding, erosion, soil drainage and other inconveniences.

This drawback is more pronounced at the federal level. There is as yet no well-defined policy for the management, the administration of national resources. Some ten or more federal departments share

\* Translated from French.

responsibility in this domain. The result is an obvious lack of co-ordination and orientation at the federal level.

Let us dwell now on fisheries. We would point out that the thinking in this respect has been along the following lines: in those provinces where both fisheries and hydraulic energy constitute essential resources, an avenue must be found to reconcile the application of federal laws governing fisheries with provincial laws regulating the use of water.

This is one of the principal cases where there is overlapping in this application of federal and provincial legislation. Co-ordination between the federal and the provincial authority is essential in situations of this nature, co-ordination that will establish harmonious operations within the constitutional framework.

A word about our forests. It would seem that the federal authority has concluded agreements whereby it provides financial assistance to the provinces to undertake forest production programs, inventories, and reforestation plans. Generally speaking, the provincial governments agree that the principle is admirable but that its application leaves much to be desired. Although the task would appear to entail but few technical difficulties, the same cannot be said where legal, jurisdictional, educational, social and psychological difficulties are concerned.

Let us dwell now on jurisdiction and the problem of recreation. It has been suggested that more comprehensive definition should be given to the role played by the National Parks Branch in the matter of responsibility for the development of public parks. Without such clarification, co-ordination with the essential auxiliary services provided by the provinces is not easy. Only by co-ordination can the public be assured that its interests are being protected in such other fields such as the conservation of resources, transportation and regional development.

National parks require the participation of the province and of one or more municipalities. They pose very complex problems. Should the initiative for regional parks be left to the discretion of municipalities? Not only parks and recreation but regional functions as well need more efficient administration. Creation of a regional authority at the secondary level is required, a body composed of elected representatives to administer matters of regional interest.

Let us now examine the problem of water. Canadian constitutional law denies any delegation of legislative power by Parliament to provincial governments, and vice versa, beyond the provisions of the British North America Act. Nevertheless, this same constitutional law authorizes delegation and co-operative sharing of executive and administrative powers within governmental commissions or corporations.

Administrative standardization is thus possible even where legislation cannot be unified. Federal power in the matter of expenses supported by sovereign fiscal authority, should perhaps be exercised more generously than can be expected of the provinces. Such co-operation could result in realization of an extensive program of development in undeveloped areas.

Improved co-ordination is essential at every administrative level as well as between the different levels. Restrictions raised by jurisdiction and by administration are road blocks hampering realization of these objectives.

As a rule, laws are the result of the political, economic and technological circumstances of the times and of the environment in which they are enacted. When their provisions are too rigid, these laws can considerably hinder the adaptation of organizations to circumstances.

#### Panelist (MR. STEPHENS)

I should like to attempt to do five things.

First, I should like to take a quick look at the vantage point in time from which we are examining the problems associated with our renewable resources.

Second, I should like to say a few words about the vantage point in citizenship, so to speak, from which we view these problems.

Third, there are a few comments that I should like to put forward about what I shall call the aspiration of this Conference.

Fourth, I shall offer a remark or two about the general problem of translating *aspiration* into *guidelines for action*.

Fifth, I should like to take a very quick qualitative look at "where we might go from here."

I suggest, that the setting of this Conference, *time-wise*, is of the utmost importance.

We are not only in the last decade of the first century of Confederation: We are in a time in which, perhaps for many reasons, ten provincial governments and the Government of Canada could jointly make all of these fine arrangements, could jointly direct a highly competent secretariat and could jointly enlist the services of so many able people.

We are at a time when many of us in Canada are somewhat concerned that our economy is not as dynamic as most of us would wish it to be.

We are rapidly approaching a point in time when the veritable tidal wave of "war babies" that all but inundated our educational institutions is about to enter our labor force.

We are at a stage in our development when our knowledge of technology threatens to outstrip our capacity to teach it and to put it to work.

We are in a time when there is a new awareness among Canadians to the effect that what we can

achieve as individuals, what we can become as a nation, what influence we can have upon the world environment, will depend in part upon what we do with our physical resources and (in the context of this Conference) what we do with our renewable resources.

This Conference has met at a time when much of what we stand for is being threatened by a philosophy and a system which is foreign to our own, and when the proponents of that system are in process of establishing a trading area of the most mammoth proportion.

If I have perceived a sense of urgency among many of the participants at this Conference, it may be related to this *vantage point in time* from which we are examining the problems associated with our renewable resources.

Perhaps because I have confined my workshop activities mainly to those that happened to concern themselves with the public sectors in the resource fields, I have come to think a bit about what I am calling "one's vantage point in citizenship." It has seemed to me, as I have listened to much good discussion, that each of us who is here has not only a split personality, but one that is split and split again; that each of us is here in at least four capacities. In one capacity we are each citizens of a local municipality or township. In another capacity each is a citizen of a province. In another capacity each is a citizen of Canada; and in still another capacity each is a citizen of a broader international community. To a large extent it seems to me, each quarter of each of us has been talking to the other three-quarters of the same person.

It has been generally accepted, it seems to me, that in every one of these "capacities" of citizenship we all have very vital interests to be served by putting to use (in the broad sense that comprehends aesthetic and human as well as material values) a relatively high proportion of the practicable potential of our renewable resources. But each quarter of each of us has been asking the other three-quarters: To what extent and in which ways do we give expression to this interest in resources management? (a) In our capacity as citizens of a local community, (b) in our capacity as citizens of a province, (c) in our capacity as Canadians, and, (d) in our capacity as members of a broader international community. It seems to me that none of us can view these problems in resources management from any single vantage point in citizenship, but that all of us have been viewing them, and should continue to so view them, from not less than the four vantage points that I have mentioned.

Books could be written about the aspirations of this Conference and about our aspirations in resources management. But perhaps these books would

be but elaboration and particularization of some such general theme as:

The basic aspirations of this Conference are that we put to early beneficial use a reasonably high proportion of the practicable potential of our renewable resources, toward all the manifold worthwhile purposes that may be served thereby; and that we vigorously set about to achieve these ends by joint effort, embracing all levels of government and all facets of industry and learning, so long as that effort is consonant with the letter and spirit of our Canadian Constitution.

Even though you may disagree with my rough summarization of the aspiration of this Conference, we might, nonetheless, address ourselves to the question as to how successful this Conference has been in translating the properly articulated aspirations of the Conference, whatever they may be, into guidelines for action.

Before I comment upon this question, I might interject a personal note. I must confess that there was a stage, perhaps early in the workshop sessions, that I felt some disappointment about the progress we seemed to be making toward guidelines. But upon reflection, as the Conference unfolded, this disappointment changed to encouragement and confidence.

My own earlier discouragement was not unlike that which I have sometimes felt before, and as I know many of you have felt also, when one contemplates the rather awesome gap that one frequently finds between aspirations on the one hand and appropriate action on the other hand.

But in this process of translating aspirations into action, or into guidelines for action, I am sure we all fall back to those methods or that system which comes most easily to us. Mine happens to be a method or a route which I sometimes call the "four P's." It goes something like this.

First, let us enunciate the problem or problems in the particular problem area with which we are concerned. Then let us subject that problem or those problems to critical and rational analysis or analyses, as the case may be. From this analysis or analyses we seek to derive our second P, which is the principle or the principles that should guide our action or behavior, in this particular problem area. Perhaps what I call principles here are what our Steering Committee refers to as "guidelines to action." Then comes our third P or the policy that constitutes the discipline or the system or the general course of behavior that rests upon and guides the application of our principle or principles. Our fourth P, of course, is program, which simply comprehends the manner and extent to which resources are to be assembled, arrayed and directed toward the fulfillment of policy.

If we examine the accomplishments of this Con-



ference in the light of these four P's, and if we bear in mind that the phrase, "guidelines to action," is synonymous, or nearly so, with my use of the word principle, (our second P) we have, I suggest, every reason to be encouraged.

If we consider this "four P" approach for a moment and its steps (1) to enunciate the problems, (2) to establish the principles, (3) to articulate the policies, and (4) to devise the programs, we will often find that the first step or the enunciation of the problems is perhaps the most difficult. At this point I think we should also interject the view that the main concern of this Conference has to do with the first two of these steps, "enunciation of problems" and "establishment of principles." Policies, after all, are for governments and "programs" and "programming" are part and parcel of over-all budgetary arrangements under which the total resources in any particular area of responsibility are being or are to be allocated. To return then to problems and principles. My own view is that as a result of this Conference we are closer to a clear enunciation of the problems relative to our renewable resources than we have ever been before. No one would argue that we have quite completed that job but we have achieved what I would regard to be a significant "leap forward" in this very difficult area.

From the many rational analyses that have been prepared for and submitted to this Conference, and from the intensive probing that has taken place in the workshops a great body of principle, that should guide action in the renewable resources fields, is beginning to emerge. If we regard "body of principle" and "guidelines to action" to be essentially synonymous terms, then perhaps what I am really saying is that this Conference has made a first-class contribution not only in the difficult area of problem enunciation, but also toward the establishment of guidelines for action.

There is no one in this room, I am sure, who would wish to contend that this Conference has completed all there is to do in problem enunciation or in the establishment of those principles which should guide action in the management of our renewable resources. An excellent start has been made; we are closer to these important first goals (enunciation of problems and the establishment of principles) than we have ever been; there is more momentum than we have ever had; and we should all do what we can to maintain this momentum, providing, of course, that we can have a proper sense of direction.

In seeking for this sense of direction I return to the four vantage points in citizenship and to the "four quarters" in each of us that I mentioned a few minutes ago. It would be my own fear that to the extent that we lose sight of any one of these aspects of citizenship, to the extent that we fail to

employ the vantage point of the municipality or the township, or the vantage point of the province, or our vantage point as Canadians, or our vantage point as citizens of the broader international community, we are likely to lose our way.

It is my own conviction, therefore, that in the further work that is to be done we must make sure that we take adequate account of all of these four vantage points or aspects of citizenship.

And so it would seem to me that the very substantial contributions which this Conference has made toward "problem enunciation" and toward the establishment of basic principles" should be regarded as interim results only; that they be now critically examined from the vantage point of the local community, that these interim results be examined from the vantage point of each province, that they be examined from the vantage point of Canada as a whole, and that they be examined from the standpoint of our citizenship in the broader international community.

In all of this I think I can see particularly heavy jobs for us to do in our capacity as Canadians and in our capacity as citizens of a province.

From our viewpoint as Canadians this Conference has done much to emphasize an over-all Canadian interest and to hint perhaps at some greater measure of Canadian responsibility and hence of responsibility for the Government of Canada in the resources field. But over and above this, I think we would agree that it would be through the Government of Canada that we can best determine and best give expression to those interests which relate to our citizenship in what we have called the wider international community.

But even though I suggest that the aspect of Canadian citizenship that is within each of us (or the Government of Canada) has something like two roles to fill, in giving expression (a) to our Canadian interests and (b) to our international interests, and hence has much to do, it is not my intention to suggest that the provincial aspect of citizenship or the provincial governments get off lightly.

It is in our capacity as citizens of a province that we really *own* and *control* most of these resources. It is in our capacity as citizens of a province that we have over-all responsibility for protecting and advancing those interests which pertain to our citizenship in the local community. This basic ownership and this high degree of trusteeship (for our interests as local citizens) impose very heavy burdens and responsibilities upon us in our capacity as citizens of a province and hence upon provincial governments.

If this general synthesis is anywhere near the mark, then it seems to me our course ahead might be something like this:

- (1) That under the aegis of the provincial govern-

ments we take back home with us, so to speak, the immense amount of important interim material that has been produced by this Conference and that each province, in its own way, set about to examine it through such lens or lenses as may be appropriate to that province and to the local communities within that province. The matter of determining the manner in which this material is to be examined, or the manner in which this lens or these lenses are to be fashioned will, I am sure, be well within the capacity of each provincial government.

- (2) That we look to the Government of Canada to fashion such lens or lenses as that Government might find appropriate, through which to examine and analyze the very important output of this conference from a vantage point that comprehends both our interests as Canadians, and our citizenship in the wider community of nations.
- (3) That we borrow from what I would regard to be the extremely satisfactory experience of this Conference and continue our efforts toward the further enunciation of problems and the further elaboration of principle. There could be much merit in a new Council, but if it is to assist in the co-ordination of all of this material and effort, if it is to provide vital communication between all of the many interests involved, then I think that we should have a very good look at the great values that this Conference has derived from the fact that its efforts were directed by a Steering Committee comprising representatives of eleven governments.

Four further quick thoughts and then I am finished:

- (1) To return to "vantage points" for a moment, and as one who has been attending resources conferences in Canada for most of thirty years, I would like to say that out of this Conference I have obtained a much better understanding of the viewpoints of people from other provinces and regions than I have ever had before, and that I am grateful for the clarity and earnestness with which these have been put forward as well as for the benefits in cross-fertilization which I am sure will result.
- (2) It goes without saying that there are a very great many, very worthwhile resource activities going forward in Canada today which have not been dammed back and must not be dammed back to await some specific outcome of this Conference. These things will and should continue to go on. But many of them will be better guided and better done because

of the illuminating and invigorating influence of this Conference.

- (3) That even though this Conference and its participants were to stop now—something which I hope will not happen—the Conference has, in my view, made a major contribution to the management of the renewable resources of this nation. I say this because I believe that there will be very few important resource developments take place from this time forward in Canada but what will derive some virtue from, and be better done because of this Conference.
- (4) And so I repeat, if these assessments are anywhere near the mark then we should maintain our momentum, and an appropriate sense of direction.

#### Panelist (Mr. BLADEN)

The problem of conservation is, in essence, a problem of capital investment and it involves a constant balancing of cost and return. This has not always been recognized, but as I have read the papers presented to this Conference, I realize that it is becoming recognized. I was happy to read in Mr. Thorpe's essay on the historical perspective: "The limitation of earlier ideas on rational development seems to have stemmed by and large from an emphasis on natural science. . . . Conservation was an end in itself, a good thing. The object was to refine techniques to improve conservation, again in the physical sense. . . . Conservation, or resource development, became a means to an end, an instrument of economic policy." Because this new attitude pervades the papers the first part of my remarks might appear redundant; but after immersion in detail it may be well to restate very simply some elementary but basic principles.

I have said that our problem is one phase of the problem of investment, and that it involves estimates of cost and return. So far as cost is concerned, we must consider two things. First, are we, as a nation, saving enough to enable us to invest enough (without inflation) to provide for the growth of population that we expect, and for the rise in the standard of living that we want? We must recognize that the cost of the aggregate capital investment, whether in resource development or in new factories, is present consumption foregone. How tight are we prepared to pull in our belts now in the interest of our children and grandchildren? Not very tight, I fear! Second, are we as a nation investing in the right things, those from which the return will be highest? The cost in this sense is the return from the next most attractive alternative investment that is foregone in order to permit the investment that is actually made. As

Dr. A. D. Scott put it in his book on the economics of conservation: "Given an aggregate amount of savings available for investment in each period of time, increased conservation of resources must mean also a reduced endowment of buildings and equipment for posterity." It is ridiculous, then, to say that conservation is a movement which has the welfare of the future particularly in mind; conservation will not necessarily increase the future's inheritance, but merely change its composition from "capital goods" to "natural products." A conservation "bias" can impoverish the nation.

If we turn to the estimates of "return" three items call for consideration. First, we must notice the special relevance to conservation problems of the distinction made long ago by Professor Pigou between social and private net product. We have to be alert to cases where social cost is incurred and private gain is reaped, and cases where investments of high potential social return are not made because the returns do not accrue to individuals, and society has not assumed the obligation to make them. Second, we have to recognize the very long-run character of most resource development programs, and to ask whether the time horizons of society and of private business are consistent. Third, we have to remember the great uncertainties that are involved in making long-run investments in an age of rapid technological change. The natural science approach to resources is liable to ignore the fact that resources are to be thought of as relative to human wants and technology. I can still see in my mind's eye that vast slag-heap in the valley that I could see from my bedroom some fifty years ago—a negative resource, waste material occupying valuable space. And I can still see it disappearing into the maw of the furnaces as a new technology and increasing demand for steel turned this negative resource into a valuable asset, a positive resource.

One of the forms of investment that is most likely to be too small if undertaken only with reference to private gain is investment in research, particularly in basic research, but also in applied research. It was a matter of great interest to me, and of great pleasure, that research was a recurring theme in the papers that I read. It was also a matter of great interest that the role of the universities in such research was stressed. It was interesting to see the very general recognition of the twofold advantage of placing much of our scientific research in universities. First, many of our scientists want, and some require, the stimulus of teaching and the atmosphere of free inquiry of the university. So, research productivity per dollar spent is greater if much of it is spent in universities. I say advisedly "much," for there are other scientists who work most effectively in research institutions inde-

pendent of any university. To secure the best results we must provide different environments suitable to the different characteristics of various types of research scientists. Second, our universities must supply the scientists of the future and only if our students are educated by men active in research are these young men and women likely to develop as effective research scientists.

The National Research Council has done, and is doing, magnificent work in supporting research in the natural sciences at the universities; the Canada Council has begun to give similar, though scarcely comparable, support in the social sciences. But, while support for current expenses in the natural sciences is more generous than in the social sciences, support for new buildings is available for the social sciences and not for the natural sciences.

Being involved in the planning of new buildings for chemistry, physics, and zoology—each involving expenditures in the order of six million dollars—I have become very conscious of the fact that at least 45 per cent of the cost of these buildings is properly designated as "for research." Surely the federal government should put at the disposal of the National Research Council a capital fund to enable it to give assistance to the universities of Canada as they expand to meet the new demands of the seventies. Fifty million dollars for contributions, on a matching basis as in the case of Canada Council grants, to science buildings over the next five years would seem to be a minimum. And the contribution to such a fund should be considered as "investment," not as "expense." It might well be more productive than most private investment, but the return would accrue to society, not to private individuals.

Now, one of the items absent from the papers on conservation is conservation and development of our human resources. Of course, in one sense, this omission is right—we conserve resources for people. The "instrumental" approach to people, which would be appropriate in a slave society, is an abomination to a free, democratic, Christian people. The full development of the potential capacities of each individual is an educational objective that all accept in principle, and governments have gone far along the road to such provision, perhaps farther than purely democratic decision would have taken them. For, while this objective is accepted in principle, the taxes necessary for its implementation are not as readily accepted.

Now, I would argue very strongly as a citizen in favor of incurring the *expense* necessary for an attempt to achieve this humane objective. (I say "attempt," for it is not only money that is needed, and perhaps there is something to be said for the increase



in funds to be a matter of steady increase as we experiment and learn to use them. A dramatic increase might lead to some dramatic mistakes!)

But I would also argue, as an economist, that a democracy may, and indeed must, pay attention to the instrumental approach. The quality of the people, health and strength, skill and intelligence, imagination and courage, trustworthiness and diligence, is one of the basic conditions of the wealth of any nation. Differences in these qualities are among the basic elements in the explanation of the different levels of productivity in different times and different countries. I would argue, therefore, that much of the "expense" properly incurred in education is really "investment." At the university level less than 30 per cent of the cost is assessed against the individual in the form of fees. The rest, except for some support from endowment, is carried by the taxpayer. The return might seem to accrue to the student whose earnings in his professional career seem likely to be high relative to those who have had less educational opportunity. Yet it is surely reasonable to maintain that society has secured a great return: without the social subsidy fewer would have trained; the services of these men would have been scarcer; their earnings would have been even higher and the aggregate productivity of the community would have been lower. I have in mind not only the services of doctors and dentists, of lawyers and engineers, of research scientists in the natural and social sciences, but also the services in all kinds of administration of liberally educated men and women. There is in my mind little, if any, conflict between the education required at the university level to justify the investment in persons as productive instruments and that required for the high educational objective of the full development of the students as persons. Whichever objective we have in mind, we should take seriously the plea of Dr. Wesley Mitchell: "It seems people who are well adapted to live in the future are people who can adapt themselves to changes with a cheer, the kind of people who can be happy even if they cannot see their places established long ahead, because they know they have the capacity for facing changes . . . people who cannot face uncertainty in a courageous and effective fashion are going to be handicapped people." This we must remember in the universities: even more must it be remembered by those who are concerned with the training of technicians and tradesmen. If manpower planning is taken too seriously and training made too specific, there will be serious depletion of our human resources!

Because the education of research personnel is of crucial importance, the expense of universities in their schools of graduate studies, has a very special claim to be considered as productive investment. At

this level of education the cultural independence arguments for provincial control make no sense whatever, and the spill over provincial boundaries of the return from such investment is abundantly clear. There is, therefore, a strong basis for the plea that the support of individual students now given from many sources, e.g., the National Research Council and the Canada Council, be supplemented by a direct grant to the universities for the support of graduate work. The cost to the universities of providing graduate instruction and facilities for directed research by such students must average some \$1,500 more than the fees charged to these students. A federal contribution of half of this amount for each full-time graduate student enrolled in a Canadian university would be a sound investment—a sound element in a conservation program. If a contribution of this magnitude were made, it would be necessary to exercise some control over the quality of graduate work and to make some efforts to avoid undue duplication of highly specialized fields. The universities could, I think, be relied on to behave sensibly and to make highly productive use of such federal support to graduate work as I here recommend.

May I close by quoting from a speech I made some years ago at a Royal Society of Canada symposium on the *Social Impact of Modern Technology*.

"Of the conditions favourable to increase in production, perhaps the most important are those under which pure science flourishes, under which the application of science to industry is encouraged, and under which an adequate supply of men with the requisite skills to utilize the new scientific techniques in industry is assured. This is not primarily a matter of economics, though a generous financial provision for education and research is not unimportant. Two conditions seem to me to be important. The first is academic freedom in the fullest sense. The second is the revival of the aristocratic tradition in education. Democracy was right to revolt against educational privilege for the old aristocracy or for the new plutocracy. It was wrong in not providing the best possible education for the aristocracy of talent. It failed to realize that such provision was not a matter of individual privilege and right, but of social advantage, even of social necessity. I turn to Harold Innis: 'A democratic society can thrive only by the persistent search for its greatest asset, and by constant efforts to conserve, to encourage, to train, and to extend it. . . Universities must strive to enlist most active energetic minds to train most active energetic minds.' Yet we hear professors of education denouncing special classes for the gifted preferring the well-adjusted to the brilliantly creative! Unless we imbue our children with the love of excellence, and give them

the joy of maximum achievement, we cannot expect to reach the high levels of production that are within our grasp, we can scarcely hope to survive as a nation in an insecure world, and, what is much more important, we shall have failed to give them individually the key to a greater happiness than is open to well-adjusted mediocrity. The human ideal cannot be that of the 'contented cow.'"

**Panelist (Mr. MITCHELL)**

No one can make an accurate appraisal of such a diverse and extensive mass of discussion during the period of the Conference itself. The real summing up, the accurate appraisal of the work done in Montreal during the past week, must come later. In that context I think I am expressing the views of the Conference when I say that the delegates welcomed the pronouncements made by the Prime Minister at the dinner on Monday evening and the expressions of co-operation given by the Prime Minister of Quebec. There is a sense of urgency. There must be an early start in utilizing the thoughts and suggestions that have been developed during the Conference deliberations. There is a big job to do; let's get on with it. Perhaps I should couple with this the statement that across the land there must be deep conviction that the responsibility for successful implementation lies with the individual. In a free country, such as ours, it is action resulting from informed, demanding, yet constructive collective opinion which shapes government policy and finally gets the best results.

Today, the four members of this panel can do no more than give you some scattered impressions of the discussions this week and perhaps put before you a few ideas about renewable resources and their place in Canada's future. Fortunately we have different backgrounds and each of us will no doubt emphasize different resources. In my own case I can only speak of our renewable forestry resources as that is the only field in which I have any experience.

A few weeks ago, in the course of our delving into some historical documents we came upon a copy of Mulvany's "History of the County of Peterborough" written around 1885 and in it was a quotation from a lately issued "Report on Forestry" by Mr. R. W. Phipps, published by the Ontario government. You might be interested in a quotation from it both because of what it says and because of the vivid and colorful way it is said.

"If the lord of these servants should at any time return from a far country, and demand to know the use the Canadian had made of his talent of timber, we should be puzzled to extricate it from the napkin of fire in which we had wrapped it. For the advance of the Anglo-Saxon across the North American region has been, so far as trees are concerned, like that of Attila who boasted that

no grass ever grew where his charger's feet had trodden. No distinction was ever more ruthless, more injurious, more lasting in its effects, or more difficult to repair than that to which Canadians, for the past hundred years, have cheered one another on. Among all the politicians who have in turn saved our country, few of them have thought it worth while to attempt to save the timber. And yet much might very easily, very valuably, have been done towards that end. But the Genius of Preservation was absent, while that of Destruction filled the land with his voice."

Mr. Phipps then goes on to give some vivid illustrations of early Canadian forestry practices, and then faces the central question.

"But one will say, the land has to be cleared. Yes and no. It was necessary indeed to obtain land for the plough but . . . had great reserves of the inferior lands and of the mountain lands been spared the axe, in proper and intermediate positions, good and constant succession of trees and large supply of timber might have been obtained therefrom, while the land which was cleared would not only have yielded larger crops than the present much broader acreage affords, but would have yielded them at a much smaller cost of anxiety and labour."

That presumably was the situation which faced the first Canadian conservation conference in 1906. You may, on reflection, conclude that in its essence, it is the situation facing us at this Conference in 1961. The problem has become more complicated—more sophisticated. We have more knowledge and more public recognition of the need to use our renewable resources wisely. But in the 1880's Mr. Phipps was talking about the conflict between agricultural and forest use of land and he was suggesting that there should be integrated policies for land classification. Today, the number of recognized claimants is increased by adding to the claims of agriculture and forestry those of mining, waterpower, wildlife preservation, recreation, and urbanization. But the problem still remains to mobilize the various claimants and the many public authorities responsible for resources policy in the development of a wise program for the integrated multiple use of Canada's renewable resources.

I think that there has been general acceptance in this Conference of this goal of multiple use of forest lands. The day has passed—if it ever really existed—when the forest industries claimed exclusive rights over the large areas from which they draw their supplies of raw material. They know that forests have an important function of maintaining the flow of water in our rivers and lakes and the power resources in those rivers. They know that



some of the richer, more accessible areas may be able to produce more national wealth if they are used to grow wheat or cattle than if they are used to grow trees. They know that in our forest areas we have a great natural recreation ground for hunters, fishermen and campers, which are increasingly necessary with the growth of leisure time, and are increasingly valuable as a tourist attraction.

We are entitled to ask only that a balanced, integrated approach be made to the use of forest lands. Our agricultural experts would be the first to say that a poor farm should not be cut out of a good forest. Our recreation experts will recognize that to keep a wildlife sanctuary healthy requires proper forestry methods and protection from fire and disease. Fortunately there is enough for all legitimate claimants if we balance the claims wisely.

Conservation is a principle that the pulp and paper industry accepts and supports. It is no great credit to it to do so because it is clearly in the industry's self-interest. With the enormous capital investment required for a modern pulp and paper mill, an operator would be foolish if he did not look to the permanent and economical supply of his raw material. But conservation is a good word that can be given foolish applications. There is no validity in the "woodman-spare-that-tree" doctrine. The only value in conserving a renewable resource is to use it. A submarginal farm near a paper mill that needs pulpwood is a misuse of resources. So also is a recreational area which tourists do not or cannot enjoy in sufficient numbers.

I would like to take a few minutes to discuss with you some of the problems of the effective use of our forest resources. I will necessarily speak mainly of their use in the form of pulp and paper. This is something that has been touched on during this Conference, but I have the impression that it has not been emphasized sufficiently. I will assume that we now know how to grow trees, that we can improve our protection of the forests against losses from fire, insects and disease; that we can apply the scientific skills to keep our forests as a truly renewable national resource. If we do not know enough about these important subjects now we certainly can and should do all possible to correct deficiencies wherever these may exist. This has been repeatedly said in this Conference and constructive suggestions have been made. A remaining question is how many trees do we need and how do we use them?

As to the demand, I think we have in Canada been slow to realize the potential of world demand for wood fiber. Again I must rely on my particular knowledge of the pulp and paper industry and I would direct attention to the pulp and paper industry's submissions and to the findings and recommen-

dations of the Royal Commission on Canada's Economic Prospects of 1956 which constitutes one of our basic frames of reference.

A little over two years ago a world consultation to study the trends of world demand for paper and paper products was held in Rome under the auspices of the Food and Agriculture Organization of the United Nations. Last year a similar consultation was held in Tokyo devoted to examining the needs for pulp and paper of the free countries of the Far East. I had the privilege of attending the Tokyo consultation and Mr. Fowler and members of our staff attended the Rome consultation. The Rome consultation concluded on the basis of careful statistical studies that were later confirmed at Tokyo that the total world demand for paper and paperboard would rise from 56 million metric tons in 1955 to 88 million tons in 1965 to 134 million tons in 1975. The experience for these apparently optimistic estimates over the past two years has fully supported them. We are faced with rapid growth of population and increased literacy and living standards throughout the world, particularly in the less-developed regions. Despite the existence at present of excess capacity and great difficulty in world markets, the long-range problem is one of meeting an increasing demand for pulp and paper products throughout the world. Canada, as a great reservoir of forest assets, has an enormous opportunity to share in servicing this demand. To do it we must chart our course wisely in respect to both the timing of new capacity and the soundness of its economy. Unless we do, our optimistic view of this glowing future can easily be dimmed and it must be realized by all concerned that it will not be easy or automatic for Canada to share in the expansion of world demand for pulp and paper. We have no divine right to any particular share of world markets. We cannot sit back and wait for demand to come to us. There are other producers, other methods of production, other renewable resources in the world. In a word, it is a tough, competitive world in which we live, and if we do not compete effectively and efficiently we will lose out and be left conserving our renewable resources without benefitting from them.

Just how dependent are we in Canada on being competitive in world markets? The pulp and paper industry is Canada's largest exporting industry, accounting for more than one-fifth of all Canadian exports. Its dependence on world trade is shown by the fact that 80 per cent by volume of its production in 1960 was sold beyond Canada's borders. Inescapably its prices must be set in world markets. Its domestic costs of production are important but they are not as important as a competitor's lower cost when it comes to establishing a world price. If pro-



duction costs in Canada are increased they cannot be passed on in the price of commodities sold in export trade.

In case someone may think I am talking about labor rates in Canada, I must say at once that it is much more than that. Certainly labor rates are important and labor must come to realize that their jobs and their security are dependent upon how well we meet competitive conditions in world markets. But the problem of increasing costs goes far beyond that.

Factors are:

Charges by government for taxes and social security programs, good management and efficiency of production within the industry itself supported by a broadened and intensified program of fundamental and applied research, the education and training of our human resources so that they may be well qualified to fill the jobs which wise policies will generate and so take their place in shaping the destiny of a free Canada, policies that will preserve access to overseas markets and avoid artificial barriers to our trade in products produced from our natural resources.

These and many other related subjects have been under intensive discussion with various degrees of emphasis in the Conference workshops. In the short time at our disposal we can do nothing more than commend the record to attention of whatever body is finally set up by the federal government in collaboration with, and with the co-operation of all the provincial governments.

We have talked about an integrated policy of multiple use of our renewable resources. But there is another item which I feel should be emphasized. It is that we need also an integrated national policy for the effective use and disposal of the products made from those resources. In short we need—and there is some urgency that we should attain it—a revised commercial policy for our export trade. And this becomes more evident the more we study the likely sequence of events consequent to the probable entry of Britain into the European Common Market.

The pulp and paper industry after searching study has publicly stated its position and needs in such event. We submit that it is incumbent upon other industries and agriculture to do likewise. Regardless of what finally happens it seems evident to us that in the rapidly developing patterns of world markets, Canada cannot remain static and at the same time be prosperous.

I have little doubt that Canada can grow the trees we need to supply a share of mounting world demands for products made from wood fiber. I am sure that eventually we will learn how better to

protect our forests and how better to conserve our great renewable forest assets. Constructive suggestions along these lines have been put forward in the Conference workshops. The key questions are: Can Canada use the trees effectively and economically in the world that exists? Can we develop a commercial policy for forest and other renewable resources which will get our goods to market—which will keep our costs of production, including labor costs, capital costs, and taxation costs, down to levels where we remain competitive with producers in other countries, and which will fight against artificial barriers to the entry of our products to foreign markets?

It would be odd if no one in this Conference had quoted Sir Wilfrid Laurier to say that the Twentieth Century belonged to Canada. Standing in the second half of that century and regarding it with clear eyes, anyone could be forgiven for wondering if we really wanted to enter into our inheritance. But I suspect we do. We still seem to think that Canada has some kind of rendezvous with destiny. If we do develop a commercial policy leading to widening our international markets, then we shall find our rendezvous with destiny is not gloomy, but glorious.

**Panelist (Mr. SHOYAMA)**

Surely no participant in the whole Conference has had a less enviable task than I. Not only must I pick up the thread of our discussion after the diversion of the "coffee break"; not only are we running almost one hour late; not only am I expected to say something new, or at least to distill from the oceans of words washing over us some few, clear drops of truth; but I also follow Dean Bladen, whose remarks this morning have clearly shown that despite his severe criticism of our educational system—of which he is himself a product—he himself is no "contented cow."

However, as the Chairman will recall, when our panel first met in his office early last Monday, both Mr. Stephens and I viewed our assignment for this morning with all that confident serenity and clear-eyed vision that is the hallmark of our prairie heritage. We had had an opportunity to reflect at some length on the kind letter of invitation from the Minister, as Chairman of the Conference Steering Committee. We had been assured of assistance and received appropriate instructions from the Secretariat. We had even skimmed through the 1,060 pages of the Background Papers, and prepared notes on what might be delivered this morning by way of a harmonious finale to the Conference Symphony.

Unfortunately, like most other clear-eyed Lochinvars from the West, we obviously had underestimated the capricious, involuted nature of the challenge facing us in this eastern bastion. For the past five days,

Mr. Stephens and I have been winding our separate ways through the labyrinth of the Conference discussions. Whenever our paths have crossed, we have tried politely to exchange notes and observations—the gist of which has simply been to discard the previous day's work. But increasingly our conversation has been reduced to trading silent, furtive glances at the harried, hunted look in each other's eye, the wilt in our collars, and the sag in our shoulders.

I mention this, partly by way of an apology for the inadequacy of my remarks this morning. But even more, I think it reflects the real, over-all impact of the Conference better than any analytical summary or evaluation I might try to make. You will remember that Keats, on first looking into Chapman's Homer, visualized "stout Cortez" on his first glimpse of the boundless Pacific, "silent, upon a peak in Darien." Now I am far from stout, but am certainly tempted to be silent, especially since some of the currents, and countercurrents in the corridors and hotel rooms of the Conference since Monday night commend just this posture. But again, as a public official from Saskatchewan with some familiarity with foot-and-mouth disease, let me try to articulate briefly some general observations on policy and administration for resources and Canada's future.

In the first place, I think the Conference has made a significant advance toward clarifying a framework of objectives for resources development policy. Despite the rapid industrialization and urbanization of the country, we see our renewable resources as increasingly valuable capital assets, capable of contributing to a substantial increase in our standard of living. This can be an increase in the obvious form of commodities for domestic consumption and an expanded level of foreign trade and international assistance. It also includes potential expansion in respect to constituents of the infrastructure essential to economic growth, particularly water, energy and the recreation of our human resources; the drive for better organized, more productive and efficient urban patterns, and a better balance in regional development across the whole country.

Broadly speaking, the emphasis of responsibility for the first phase of growth lies in the private sector; for the second category, in the public sector. To this latter, because we are a democratic, human society, we must add: first, the obligation to minimize individual social cost and dislocation resulting from the continuing pace of needed resource use adjustment and development; and second, the "primitive" objective of preserving renewable resources simply because—in spite of necessary and sophisticated cost-benefit analysis and the rational theory enunciated by Dean Bladen—these resources by their very nature are intrinsically important to us. I think I sensed in

several workshops an undercurrent of conviction of how our land, water and forests contribute in a very real way to our psychic income, to our sense of order, beauty and fitness, and to our morale and identity as a Canadian people. These are clearly objectives capable only of a political assessment, but are no less valid on that account.

In the second place, the Conference has gone far to clarify and illuminate the complex nature of Canada's resources problem. We have had our attention focused on, or should I say dispersed over, a wide range of factors conditioning growth. Our country is too vast and too cold; scientific research and technological advance are increasingly difficult to achieve and disseminate; at first glance the bare facts of the constitutional division of powers militate against rational, long-term policy; our educational system is woefully inadequate to produce the human skills and understanding required for the future; and altogether our economic and social horizons are constantly shifting.

How can we, as individuals, organizations, or governments see our way clearly through this tangled maze to grasp a general framework and suggest appropriate private and public policies? The Conference, surprisingly enough, seems somehow to have succeeded in this Herculean task, and argues the following salient guidelines:

1. Optimum resource development in the future will only take place under—but is essential to—adequate and reasonably stable growth in the overall Canadian economy. The effective criterion for such growth is full employment. This focuses emphasis upon the broad powers and responsibilities for fiscal, monetary and trade policies vested in the federal government. Its leadership role in this regard is clearly indicated.

2. The surge of demand for much of Canada's primary resource products which took place immediately after the war may have temporarily obscured the fact that much of our resource base had long since lost its pristine virginity. It seems clear that while our resource endowment is still abundant, the simple, exploitive phase of the richest and most accessible resources has ended. Today we are faced with the need for wiser use and productive investment in these capital assets, just at a time when competitive conditions, in vital external markets particularly, are stiffening. The implications for programs of expanding research, improving technology, and rational measurement to assure optimum investment policies in both the public and private spheres have all been elucidated and emphasized.

3. If it were ever possible to ignore the close interrelationships between the various resource



sectors, and between the technical and socio-economic aspects of development, that time is long past. At certain points, tradition and complacency challenge this view. But the weight of Conference evidence declares categorically that the increasing demands upon particular resources, combined with the need for improving productive efficiency in all areas, necessitates the multiple use approach. Consequently, cross-fertilization and the interplay of many skills and disciplines must enter into the understanding of technicians and administrators alike. The administrative forms and procedures necessary to achieve this comprehensive view are of critical importance. The stimulus to this kind of thinking on the part of hundreds of key resources administrators may well have been the most important result achieved by the Conference.

A third important broad current of the Conference has been to make clear the enhanced role of public policy in resources for Canada's future. An integral aspect of this is the need for wholly pragmatic approaches in defining the regulatory, co-ordinating and development role of public authority at whatever level. Further, renewable resource complexes clearly have no respect for political boundaries, and impel a series of interlocking relationships between and among various authorities. Just as in the case of multi-purpose projects, administrative "torpitude" and vested interest, no less than technological "torpitude" (recalling Professor Hare's phrase), must give way to experimentation with new administrative devices and structural forms. In government particularly we need some especially hard thinking about long-cherished traditions of departmental and ministerial autonomy and how time-honored bureaucratic forms can be adjusted to evolving needs. Last of all, we need consciously and carefully to work out the particular relationships in joint action appropriate to Canadian federalism. Each of these issues turned up in workshop after workshop.

I want to conclude these remarks with some very tentative suggestions on the question of federal-provincial co-operation and the notion of "co-operative federalism" which has been sounded throughout the entire Conference. I think we now see that while the jurisdictional framework defines certain broad roles as between the two levels of government, there is no insuperable constitutional obstacle standing in the way of consistent and co-ordinated resource development policies. On the contrary, in a country as large and diverse as our own, the federal system can be a positive asset. If properly utilized, it can make for sounder decisions, more useful programs, and better long-term results than would otherwise be possible. It can do this if the federal government fulfills its broad leadership role in sustaining the over-all

pace of balanced economic growth, but stands essentially in a supporting role to assist the provinces in effecting resource development programs initiated and planned primarily by the provinces themselves—individually or in groups.

Such integration, the Conference has made clear, is obviously necessary. Looking at the problems of resource development from a provincial seat, it seems to me that the federal influence is so pervasive and intrusive (and these words are not used in a critical sense), that success or failure rests largely upon the environmental policies adopted at the federal level. Federal tax policies may hinder or enhance development. Trade policies may make a resource redundant. Other economic or social policies may lessen the financial ability of the provinces to undertake resource investment. More positively the federal government is strategically empowered to undertake vital long-run capital financing, to evaluate and adjust the level of aggregate investment as required, and to influence in the broadest way the balance between the flow of funds into the public and private sectors. It would seem, therefore, that the keystone to the arch of a comprehensive resources policy for Canada's future is the federal government.

But without the rest of the stones, there is no arch. While on the one hand there are formidable obstacles to a province proceeding alone in a long-term resources policy, on the other hand there can be no effective national policy without the active co-operation of the provinces. Their role seems reasonably clear.

The provinces are likely to be more acutely aware of the detailed needs and possibilities of their own resources. Having this knowledge, they are best able to allocate expenditures and investments for optimum returns, and to determine the proper priorities among competing programs. They are properly sensitive to the democratic—and we trust, *informed*—will of their citizens. They must always face up directly to the interrelationships between technical advance and adjustment and elusive socio-economic factors. Further, if the primary responsibility for initiating and planning resource programs and projects lies with the individual provinces, it is possible to cut through the familiar dilemma that so frequently obstructs progress at Ottawa—the quite irrational and narrowly political insistence that aid to any one province must always be regarded as a precedent for identical forms and levels of assistance to all the others. Finally, the mere fact of their smaller size helps to relieve some of the difficult administrative complexities involved in any large-scale or extensive multi-purpose resource program.

Thus, for all their geographic faults such as non-conformity with river basins or broad economic re-



gions, the provinces have emerged from the Conference discussion as reasonably viable, and potentially highly creative units for decentralized planning and administration in resource development and national growth. It is within a context of this kind that I think

the idea of some form of over-all federal-provincial consultative machinery, and the notion of a "national development fund" in the resources field, deserves further study.



*Banquet and Luncheon Addresses*





# *Banquet and Luncheon Addresses*

Speeches delivered during the course of  
the Conference by:

The Honorable JEAN LESAGE,  
Prime Minister of the Province of Quebec.

The Right Honorable JOHN G. DIEFENBAKER,  
Prime Minister of Canada.

The Honorable RENÉ LÉVESQUE,  
Minister of Natural Resources, Province of Quebec.

The Honorable J. W. SPOONER,  
Minister of Lands and Forests, Province of Ontario.

Mr. PAUL G. HOFFMAN,  
Manager, United Nations Special Fund.

## **The Honorable Jean Lesage**

### *Prime Minister of the Province of Quebec†*

\*I would like first, in my capacity as Premier, to welcome you most cordially to the Province of Quebec and stress the importance I attach to the Conference which has just begun. I know that much care and time have gone into the preparation of this Conference. No doubt the results of the discussions of such a group of experts will serve to enlighten the actions of the various governments of the country in the development of our renewable resources.

Because of the repercussions which will, no doubt, result from this Conference, it is necessary, I think, for all of you to express your opinions freely, which is exactly what I intend to do myself. Your governments have invited you to take part in these deliberations, but this does not mean that you agree with their policies in any way, or that you are acting as their spokesmen. On the contrary, whether you are from government, industrial, professional or university circles, you will take part in the discussions as *individuals*—in your personal capacity. In this way, you will have an excellent opportunity to express those thoughts which you have in common and to state your views as well as any new ideas which you

may have. The only aim of the Conference on "Resources for Tomorrow" is, in fact, to analyze the deficiencies which exist in the development of our renewable resources and to give us an idea of the norms required for their proper exploitation, while taking into account the various uses of waters, lands, forests, wildlife and fish.

In this province, we have taken cognizance of these problems and we know there remains an enormous amount of work to be done to solve them, and to reach the goals we have set for ourselves. We are nevertheless confident that we will achieve these aims because there is evidence that the population of the province realizes, not only that the wealth of our soil and sub-surface belongs to the people, but that it is the people who are responsible for its development. The enormous potential we enjoy, the people want to use to their own advantage; and through the proper planning of operations, they wish to assure the material progress of the entire Quebec community.

The Government of Quebec knows the attitude of the citizens of this province toward their natural resources, and believes it is its duty to make sure that this attitude is respected.

That is why we are aiming at the present time toward giving the provincial administration the institutional framework which will enable it to carry out

†Address at banquet tendered by the Government of Canada in the Grand Salon, Queen Elizabeth Hotel, Monday, October 23, 1961.

\* Translated from French.

the tasks it has undertaken with a view to encouraging the development of Quebec's potential. In all this undertaking, we are guided by a fundamental principle which several departments concerned with the development of one or another of these resources, have already started to translate into action. This principle—this rule of action, should I say—one finds in the concern for planning, a concern which we share and which we employ ourselves to initiate action in all spheres of our economic life. Heretofore economic development in Quebec has been based on arbitrary policies, the *laissez-faire* and the expediency dictated by partisan politics.

In order that planning may be effective in a country such as ours—that it may steer the development and the conversion of appropriate resources in the right direction, a certain number of conditions must be met. We need, for example, a precise knowledge of the facts; we need competent personnel who are receptive to problems which arise from the interrelation of resources and their uses. It is necessary also that each of the provincial governments develop adequate administrative structures. Above all it is necessary—and this is what I would like to stress—to take regional differences into consideration in the preparation of plans to be implemented.

In fact, this is indispensable, because—even if planning is *conceived* both at intermediate and higher levels of government—it must be put in concrete form, in the final analysis, at the regional level. It is at this level, as you know, that the majority of problems are encountered in planning resource development and use.

We live in a vast country with numerous economic regions. Obviously, this does not ease the task of those who believe that serious planning is imperative, especially if the responsibilities in each administrative set-up are not clearly defined at the start.

I believe there exists a reasonably simple way of defining them. My opinion is based on two simple observations of facts.

The first—I have just expressed it—is that, for very obvious reasons of efficiency, planning must take regional differences into account. The second is that our Constitution gives jurisdiction over resources, renewable or not, to the provincial administrations.

The very large vista of activities which economic planning reveals, the very nature of the action to be taken, the fact too that we live in a confederation in which we are all interdependent—all are factors which, on the one hand, prompt the federal government to bring its important contribution to such a vital undertaking. But this contribution, in our estimation, should be of a general nature. It may, for example, be based upon the knowledge which our central government has of the requirements of the

Canadian situation in the field of international trade, or on the influence which its position enables it to bear on other variables, such as currency and certain types of tariffs.

On the other hand, the Constitution entrusts each of the provinces with the responsibility for developing its own territory. The immediate steps of such development and administration of the wealth of their soil are equally within the competence of the provinces. It is the provinces which can control the majority of factors through which planning may be effected with reasonably good chances of success. The provinces are also in a position to influence the shape of their industrial progress through action to localize secondary industry, through developing communications intended to make basic resources accessible, and through their absolute jurisdiction over the municipal framework. The provinces can, moreover, participate directly in investments to develop resources and to plan industrial facilities where economic conditions require it.

An examination of, and careful reflection upon, the facts which I have just placed before you, suggest a conclusion which—I think—is in full conformity with the spirit of the Canadian Constitution. It appears to us that the provinces of this country are, in law and in fact, responsible for their own economic planning, for the economic planning of their natural resources, renewable or not, and for the planning of their secondary industry, that of converting these resources into products.

This responsibility—in connection with which the federal government naturally can offer a valuable contribution owing to its position in the Canadian framework—this responsibility, I repeat, means that the provinces must co-operate constantly with one another, since the task which is henceforth theirs is of such magnitude that it would be dangerous to minimize it. Its very complexity should move them to maintain frequent contacts between themselves. On this subject, I would like to underline the very extensive and very useful role which can be played by the permanent interprovincial secretariat which I had the honor to propose last year in Ottawa.

††In this sphere, as in many others, the Government of Quebec is ready to co-operate, but this co-operation will be, as I have repeated so often since July 1960, in spite of all the publicity that has been given to the voice of a very few—an *active* one. The people of Quebec are more than ever aware of their rights; but mark my word—they no longer wish to live apart. This evening, I have openly expressed our views. If I have done so, I have not done it in a spirit of misplaced provincialism—because we who live in Quebec feel that in our way of doing things,

††Originally in English.



in our way of living, we can be a positive element and an additional source of survival and pride to the whole of the population of Canada.

**The Right Honourable John G. Diefenbaker**

*Prime Minister of Canada†*

I welcome the opportunity to be here at this, the first truly national conference on conservation of the renewable resources of the nation, and I say at once that it represents to a commendable degree the co-operative spirit of the various provincial governments that are represented here, all the provincial governments of Canada. And, as I have been informed since arriving here this evening of the discussions that have taken place, the papers that have already been read and the speeches that have been given, I think it can be safely said that this event in co-operative conservation effort was a full recognition, as the Premier of Quebec said, of the constitutional situation of our country, and of the fact that the jurisdictional position thereby created can be brought into agreement, in so far as resources are concerned.

I believe that a plan and program, not of direction but of suggestion, can be drafted in co-operation between the representatives here not only of the federal and provincial governments, but also of the other facets and segments of Canada, which—while implicitly maintaining the constitutional division of powers—can give a new meaning to a national concept of conservation. Indeed, I think this is but another step in the building of that one Canada wherein under the Constitution there shall be strict observance of those constitutional rights that shall be unchanged—that we in a spirit of co-operation can work together on behalf of that field of action that is so necessary in the world in which we live.

May I thank my colleagues and the Ministers of the various provinces, the members of the federal and several provincial civil servants' organizations and bodies, and all associated with them, who have organized and worked for so long to make this meeting possible, and to provide information for the background documents. May I say in this connection that I have perused those background documents most carefully and they represent indeed a worthy effort.

I want to say more—that all over this nation there is a new awareness of conservation. There is a concern about the pollution of water. At this very hour, there is a deep concern over the pollution of air. Today we are all affected by this. Khrushchev again, in testing, used two of the largest bombs—the largest ever used—thereby polluting the atmosphere of in-

nocent nations and peoples everywhere in the world. This action represents a callous attitude and disregards the rights of humanity of all mankind to air that is clean and pure. I want to add to this that Canada has had a great deal of experience in this connection. I am not going into particulars this evening, but some of you will recall that, in our relations with the United States in 1935, we arrived at a basis respecting a certain industrial concern in Trail, British Columbia. We arrived at a basis, as a result of the co-operation between these two countries, where that concern, pouring poisonous things into the air, was placed in a position where its rights, the rights of those who otherwise would not have been recompensed, were brought into a just and perfect position.

Until recently, it has been taken for granted that there would always be pure water and fresh clean air. I read this morning a very recent book, written by an American, Charles W. Ferguson, who deals with conservation. He said this: "I have read for years in the field of conservation, trying to acquaint myself with the policies of government and private enterprise that make for the best use of our ailing soil. Naturally a certain amount of what has flown over me has left a kind of alluvial deposit of information, some of it rich, but the summary of the problem and aim that sticks with me, and comes to mind most often, is that of the Texas forest ranger who said that the object of all conservation effort is to hold every drop of water where it falls, and if you can't do that, make it walk off instead of run off." That is one view of conservation.

There has been a recent widespread and related recognition of the need to preserve wholesome water, a natural resource—one of those resources which we believe to be unlimited—a resource that will be in short supply by 1980 unless action is taken. Unless action is taken by organizations and groups such as this, water shortages will hamper future growth. Indeed, shortages are already threatening in parts of our country.

Canadians must take positive measures for the preservation and development of our wildlife. In the days of my boyhood on the Prairies, the numbers seemed unlimited; in the days of my boyhood, the majestic whooping crane seemed to be the chief leader and guide of almost every flock of sandhill cranes. These are the things that affect the average Canadian. And, when some years ago I announced the desirability of such a conference being convened, I found I was voicing an awareness that resources and their conservation are fundamental in shaping Canada's future.

We meet together in that spirit, referred to by Premier Lesage, of co-operation. Fully respecting the constitutional division of responsibilities, representa-

†Address at banquet tendered by the Government of Canada in the Grand Salon, Queen Elizabeth Hotel, Monday, October 23, 1961.

tives of the federal and provincial governments and others have come together to explore common problems. The federal government does not come in the position of a determinant; it is one of eleven governments with a Secretariat under the jurisdiction of all governments, and a Steering Committee comprised of one Minister from each of the governments.

As the Honorable Alvin Hamilton said, we tried in the past. In 1909, Sir Wilfrid Laurier set up the Conservation Commission, essentially a federal agency which remained in more or less spasmodic effect until 1921. During those years, there were conferences. Since then there have been several kinds of resource conferences, convened from time to time, respecting particular resources, but their action was limited to little more than a series of speeches.

I am impressed by the fact that this Conference is of a different character—the climax of three years of effort, dozens of meetings, 80 studies, with every emphasis and concern being laid on national, provincial and regional aspects. I see this nation as a whole within the constitutional fabric of Confederation. I see that vital element of co-operation, with Canadians as a whole developing a continuing policy of national expansion; thereby we shall retain the control of the national—the political—destiny of this nation. I see conservation as a necessity for more and more and larger fields of social justice—an ever-increasing productive base is needed for larger revenues which can only be secured by a buoyant and growing economy. I see the necessity for growth in productivity as the only way to national and economic greatness. A rapidly expanding labor force with greater technological efficiency demands a vigorous development policy to make this nation stronger and more prosperous.

And, internationally, we have to meet the communist challenge. This was emphasized by Khrushchev last week when he predicted, as he said, the triumph of socialism everywhere in the world, politically and economically—and those were his words.

This Conference provides a systematic analysis of matters that have a direct influence on the well-being, not of any one province, but of the nation as a whole. Now, this Conference will not solve all the problems or make recommendations covering all the solutions, but I see it as a birthplace of new ideas, new plans and new concepts. I see this as a priceless opportunity to preserve our resource heritage. That is not the business of any one government, nor is it the exclusive responsibility of private enterprise.

This Conference will provide a focal point around which the work done by industry and private organizations and individuals can be interpreted, integrated, correlated and publicized. Already the eyes of Canadians in every part of the country are on this Conference. It will encourage Canadians to under-

stand that conservation and resource development actually begin at home. It begins on every farm, every woodlot, every lake, every river, every game sanctuary and every nesting ground and every fishery in every region of every province and territory.

As I said a moment ago, I see this Conference as a practical one to bring forth well-developed plans and schemes by which the renewable resources can be utilized wisely, so that they may be replaced, replenished and increased. This will be of demonstrable benefit to the people as a whole: to farmers, fishermen, and to the tourist industry, labor and management.

The plans must be subject to continuing review, but there is need for some blueprint in the nature of continuity, rather than the "start" and the "stop," and the uncertain, uncorrelated programs that have existed in the past. For, after all, conservation is a dynamic concept. I believe that governments across the country must give consideration to investing a greater measure of financial assistance in conservation measures. I hope that out of this meeting will come fuller co-operation of federal, provincial and municipal governments in a continuing program.

I want to make abundantly clear, though it is not necessary—I've said it so often—that the federal government must not and will not interfere in provincial control and management of natural resources, either directly or indirectly. But there is a widespread area where federal support of provincial efforts will be, and can be, beneficial within the constitutional framework.

There is an enormous world market waiting for forestry products if Canada is prepared to meet that demand, while recognizing the primary and constitutional responsibility of the provinces for their respective forest resources. I am glad to know that the problems of forestry management will be reviewed shortly by all of the eleven senior governments.

In the field of forestry we have developed a working arrangement whereby, without interfering with constitutional jurisdiction, a federal Department of Forestry under the Honorable Hugh John Flemming has been set up, where research facilities will be provided in increasing measure.

Another example is in the field of mineral resources, in identically the same position as so many other matters. The federal Department of Mines and Technical Surveys has increased and accelerated its efforts in the fields of geological surveys, hydrographic mapping and studies on oceanography.

In the field of agriculture that is shared jointly by federal and provincial governments, the federal Department of Agriculture has long been in the forefront of basic and applied agricultural research in plant and animal production. Parliament at the last session passed the Agricultural Rehabilitation and



Development Act which will bring new hope, as well as new principles of conservation and resource use, to the rural areas of this nation. We intend as well in that department to expand agricultural research in the fields of processing, marketing, and economics.

Then there is the Department of Fisheries, a federal department under the Honorable Angus L. MacLean which has been of assistance to the fishing industry by providing basic research and other assistance. This has gone on for years; programs are being developed to raise the productivity of fishermen.

Another example is the Department of Northern Affairs and National Resources. The Premier of Quebec was the Minister in that department; he and I came in to the House of Commons together—the same time, not on the same side. Nonetheless all through the years, I was interested in his work in the House of Commons and when he was Minister of this Department there was co-operation developed with the provinces, impetus given to the recreation industry and to national parks and to the tourist industry generally. In the last three or four years, we have provided the Roads to Resources and Forest Access Roads programs in which the field of conservation has been aided. And so on I could go—after all we are not watertight compartments. The federal Department of Public Works, recognizing the necessity of clean water and the need of meeting that frightful problem of pollution of our streams, now gives assistance to municipalities in measures for sewage disposal. We are co-operating with the provinces in the utilization of river basins such as the Thames River in Western Ontario, the South Saskatchewan River irrigation project, the St. John River. Discussions are proceeding with respect to the Columbia River. And the Red and Assiniboine Rivers are also being considered, and studies are being made on the Nelson River system.

Internationally, in the field of wildlife and migratory birds, we have initiated important discussions with the United States government, for after all the wildlife resources of this country, while they owe much to private groups that have been working in this field, need as well the co-operation of federal and provincial governments.

In the field of energy and development under the National Energy Board legislation established in 1958 we maintained a national inventory of energy resources closely linked with conservation. And I could go on illustrating how we are building in co-operation a strong and greater Canada. Indeed, the coming session of Parliament will have before it the implementation of the legislation passed at the last session to promote national amateur sports in all parts of Canada, as part of a human development program based on the recognition of the importance of recreation and physical fitness.

This is something of the picture. I don't want to go on into all the fields, I don't want to tire you—but I think you'll allow me to say that there are a number of things which we could do within one united framework by bringing together in co-operation federal and provincial governments, private corporations and groups. I will sum up in this way: I think that you have proven today that these resource conferences are helpful and beneficial.

To me it is a wonderful example of good citizenship to see brought together in this gathering, from all parts of Canada, seven or eight hundred interested men and women. I think these resource conferences should meet—I think you'll agree—not every year, but every three or four years to review progress, examine current projects, develop new ones, bring together the representatives of governments at all three levels, and of universities, industries, and other organizations, so that you will be keeping pace in your recommendations with the developments that take place in resource conservation and development. At such a conference, scientific papers would be presented and discussed, and current problems would be fully examined.

I express more than a wish in this connection. To this end the federal government is prepared, subject to the approval of Parliament, to underwrite part of the cost of preparing for such periodic conferences.

Second, the federal government, with the co-operation of the provinces, is prepared, subject to parliamentary approval, to set up and support a National Resources Council, to consist of federal and provincial representatives and other interested persons—the composition to be agreed upon—whose function would be to provide a body concerned with resource conservation, renewal and development in Canada; not an executive body, but a consultative and promotional body. This body would publicize conservation aims and aspirations and promote interprovincial and regional co-operation.

Three, consideration should be given to the establishment of a National Advisory Land and Water Use Board. The federal government is prepared in the national interest to support the establishment of such a board to be specifically charged, subject to the acceptance by provincial governments, with making recommendation for the co-ordination of land and water use on a national scale. Indeed, such a body might be empowered to carry out the agricultural rehabilitation and development program which was announced recently.

Those are three suggestions that I place before you, representative of my belief that what you are doing is good for Canada. I would not have made these suggestions three or four weeks ago. I did not think when I heard the reports being given to me by the Minister the Chairman, and by Mr. Hamilton,



that it would be possible to bring together as has been convened here, this outstanding representation of men and women from all parts of our country.

This is the beginning, as I see it. Respecting the Constitution, Canadians in all parts of this country have, together, through this means and in consequence the mobilization of this Conference, an opportunity to join in further co-operation to build for the future of Canada and the long-term future of this nation. This Conference, I believe, in the long-term future of this nation, is one of the most important that has been convened in the many years that I have been in the House of Commons.

I want to assure you that while your recommendations, whatever they may be, will not have, and cannot have, the force of direction or directed action, the federal government will give the most serious consideration to your deliberations and proposals; for you, indeed, are the pioneers in a great undertaking. It amazes me to find gathered together here men and women without any personal gain in mind, who in a spirit of dedication to a greater Canada are prepared to meet and give of their best. I thank you and I wish you well.

#### **The Honorable René Lévesque**

*Minister of Natural Resources, Province of Quebec†*

(After preliminary remarks, Mr. Lévesque addressed the following words to the Quebec delegates in French)

On behalf of the Province of Quebec and of its government, let me tell you in French how pleased we are to welcome such a large number of guests to this joint dinner which our friends from Ontario and ourselves are offering you this evening.

I should like to greet everyone in a very friendly way, to thank you for being here and to thank particularly (since we are among ourselves, this is confidential) the participants from the Province of Quebec. I have not seen them since a few meetings back, in fact since a particular meeting before the Conference, except maybe since Monday by a mere chance in the hotel hallways here. I did not see anybody. We do hope to make up for lost time about the end of the Conference or after. It was explained to us before the Conference that all participants, whatever class they belong to, should feel completely free; that they do not get the impression of being in any sense the delegation of the Quebec government, but are here as individuals, everyone for himself, with his own ideas. We shall see later all the troubles this may cause, but at present it is everyone for himself.

I should also like to emphasize the impressive quality of the participation; the quality and number of participants. This is still more impressive in view of the recent past. We do not need to go through the trifling facts of our history; we all know what it was like. But there were uncontrollable reasons why we were late in taking part in this Conference. As a matter of fact, I believe we were a year and a half or two years late compared to others. Considering the time that has been lost, I believe that we might consider almost as a miracle the work that has been done, the participation that has been achieved on behalf of the Province of Quebec in the course of only a few months. Therefore, I should like to congratulate very sincerely those who have worked with the National Secretariat of the Conference for the past several months, and also at home. As a matter of fact they have also worked with various government departments, universities and private associations, to make up for lost time and give us this extremely active participation.

At all events, this is to us a golden opportunity. I believe most people are convinced of this; I have already heard accounts to that effect. It is for this reason that we cannot regret having been here; as a matter of fact, we cannot help congratulating ourselves. It is a golden opportunity for Quebec people, who are actively interested in the resources and their development to realize the legendary prescription of old Montaigne who said that it is always highly valuable to exchange ideas with others in an increasingly complex world like ours, where each field of activity becomes so much more specialized from year to year. Before long, even the making of shirt buttons might require long scientific memoranda, to go to the root of the matter.

In that world, and even in Canada where we live, (which as a matter of fact occupies a good part of that contemporary world) the problems—all problems as well as resources—are of majestic size. Such extended contacts as those provided by a conference like this, this regular association with others to compare mutual experience; all this seems to me an essential condition for any progress.

Well, from this point of view, we may say even now, before it is completed (and this is non-committal for the future), that the Conference is a success. We cannot fail to come out of it enriched, and certainly in many instances a good number of our participants will probably come out of it with the certainty that they have contributed to enrich others. This is very valuable.

Now, if you permit me I shall turn bilingual. (Mr. Lévesque then continued in English.)

This impressive and worthwhile Conference is about Resources for Tomorrow. Now this single word *tomorrow*, just by itself, is already a sort of program,

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because tomorrow—I think it is obvious—tomorrow is not today, and even less is it yesterday.

But tomorrow certainly doesn't mean, by any means, to go rushing off half-cocked into some great unknown. Tomorrow, however, I think means that eventually this impressive Conference should bring us more than its immediate and indisputable benefits which we can all feel in the form of new contacts, of an unprecedented exchange of ideas and experience. In other words, if the Conference is to be the real landmark that it can be in its field, we should think a little bit about the meaning of tomorrow and even of a few *tomorrows*. In terms of economic development, tomorrow, if it means anything to us, means at least the next ten, fifteen or twenty years. Economists can figure it out, but it means something long-range. *Tomorrow* means resources, all resources, renewable and non-renewable, but it also means a lot more.

For instance, it will mean our situation on the continent of North America, a continent that we share (or at least have some faint hope of sharing), with some rather important neighbors. It means also our situation across the North Pole, facing another neighbor whose every daily action is a challenge. It means our situation in the world where, we figure, Canadians make up an underpopulated immensity of *haves*—of overadvantaged, too-well-fed people—alongside uncountable millions of *have-nots*, whose rising and every-day-more-furious expectations constitute a problem that we have to face and to help solve, at least as generously as anybody else. At the other extreme, to bring it much closer, tomorrow—it seems to be the hope of most of us—will still mean Confederation.

Confederation is a very complicated setup where the very presence of eleven senior governments-in-action is a problem by itself. That alone is sufficient indication of the wonderful jigsaw puzzle which any joint decision is bound to be. The multiple context of this continent, this world and even of this country and its various parts, is enough, to preface the first remark which I would like to make. Even though marked by much eloquent talk about multiple purposes, I honestly believe this Conference will be more fruitful the more it sticks to a basic modesty about itself.

Such things as land, water and forests, which we are talking about here, and mining resources, which we are not, are obviously the A.B.C. of any country's economic life. But resources as such are just a start; they are but the beginning of that long and incredibly complex alphabet of modern economic activity which stretches all the way into the social problems, employment, finance, markets, etc. This Conference, in other words, is essentially a preliminary effort to assess one basic part of the eco-

nomic picture. And you can't tear a part out of the picture, it has to stand as a whole. That means that the results of this Conference, once they are sorted out, will have to be integrated carefully into a much larger ensemble, if they are to prove as fruitful as they should and can be. This promises to be such a huge and many-faceted task that the one thing we should stick to is that this is essentially a free and uninhibited gathering of specialists for the gathering of facts, information, opinion from all over Canada. We cannot pretend to supply definite and immediately applicable answers, especially over-all answers, to all or even to many of the questions that are raised.

This does not mean that quite a few valid answers cannot be proposed here, emerging out of lively exposition and argument. But any such precious find will have to be taken back to our various seats of government, and there examined carefully to see where and how and even how much it fits. Because, like it or not, I think that is the ransom of democratic government and democracy. You know, Churchill said once that it's the worst possible system of government, except all others. But he never lived in *confederate* democracy!

Now, take our case here in Quebec. Those new fiscal arrangements, who do they favor? We in Quebec have immense resources, both renewable and non-renewable. In fact, we are practically ashamed of having so much, and we would even blush gracefully if we could get back a little more of Labrador. In fact I think we have something of practically everything of the greatest value in modern economic life, and we have some huge reserves of quite a few things.

These vast resources are there, if they are there for any kind of justifiable reason, for the benefit of the people. And because our people are more aware than ever before of their ownership, their basic ownership, it means that we have needs comparable in magnitude to our resources. Now, if you don't mind, I would like to be as frank in English as we can be between ourselves in French.

The vast majority, 85 per cent, of the people who feel so rich and so needy at the same time are French Canadians, as all of you know. There are many reasons—historical, social and even governmental—why French Canadians, who are the majority owners of Quebec resources, often feel very discontented, even quite frustrated, about their ownership and what's happened to it.

The brutal fact is there, and the brutal fact is that they own much but they participate very little. Now they feel that they own the greatest share of Quebec's common property, but that they receive much too little of the income. That's a very dangerous situation. Wherever you have a man who owns shares but doesn't get the dividends, it's a very



unhealthy situation. Economically it's bound to breed a feeling of second-class citizenship. And that's very dangerous. Such a feeling throughout today's world is becoming unbearable wherever it exists. It's just as unbearable here, although perhaps less dangerous because we are such nice well-behaved people. But basically, it's just as unbearable here as anywhere else.

In Quebec as elsewhere, more attention than ever is being given to education, to the promotion of talent and to our version of the revolution of rising expectations. We in Quebec—and particularly the 85 per cent of Quebecers who are French Canadians—are confident, in fact certain, that such expectations will not be in vain, because *people* are still the most powerful of all resources. Once they have their minds fixed on new expectations, if they are logical and just, something has to happen. If such expectations should be in vain, then Canada, as we know it, would definitely be in the soup—very hot pea soup. That's for sure.

I would ask you please to believe that I am being as honest and as frank as I know how to be. Maybe this sounds a little quixotic to non-Quebecers, because, being a majority in most provinces in Canada and in the federal government you don't feel those things as easily and you don't live them as we do. I believe this is a basic and urgent thing. Now this means, if it is true, that in the interest of Canada as a whole, as well as of Quebec itself, we think our first and foremost priority is to make this province—this huge chunk of Canada—healthy and confident and progressive as quickly as possible. Only this can assure for the years to come, that Quebec will really play its vital role in a stable Canadian prosperity.

In the fields we are particularly concerned with here, we are faced, as I think other governments are, with internal problems of adapting to new economic necessities—or rather internal problems of administrative structures and communications. For an integrated policy in resource development and conservation, we need to revamp many of our traditional administrative channels, and probably most of our traditional process of decision-making. Since government is called upon to make more decisions all the time, to be more and more present, it is bound to be more and more involved in all economic matters.

Now, some like this, some don't. But I think the fact is there. Since this is so, the government should be ready with all relevant data and with a sense of direction—especially a sense of direction—every time it has to decide something. This I think would come close to a layman's definition of modern economic planning, as opposed to 19th-century *laissez-faire*. The 19th-century was a wonderful century but we

are not living in it. Nineteenth century *laissez-faire* and the old concept of government, which was so comfortable, is now gone. The concept of government which was considered to be a useful tool for private interests is finished. Any such government is a dodo and doesn't know it.

That is the basic way we look at it, because it is not easy to get out of old habits in Quebec. In resources particularly, this means that planning and progress have to begin in our own backyard, close to our own vast supply of resources and problems. In various ways, doesn't that apply to most of us? To be efficient and to be durable, doesn't any building have to start with foundations? Canadian foundations—economic, but also political, social and historical—are basically regional, and must remain so. Anytime we think of putting on a roof before building foundations and walls in well-thought-out and well-concerted fashion, we usually create nothing but trouble. Now this same basic attitude will still apply when this Conference is over, but with one important addition. Thanks to all of you, we will have a better understanding of our Quebec version of resource problems.

First, we will go back home and evaluate results as best we can, as quickly as we can. We will try to apply everything usable for planning our own projects. With this we count on being able to work harder and more efficiently for a progressive and self-reliant Quebec. This is certainly our most important potential contribution to the welfare of the country as a whole. After this priority is well understood, we feel that any continuation on a national scale, is a question for the Steering Committee to consider.

With all the enthusiasm that has been generated here, and with all our common needs that we know about, it is a sure thing that we need some continuation of this three-years-in-the-making, impressive, Canada-wide Conference. But premature talk about structures or definite plans could create nothing but difficulties. That is why we, for instance, have decided to evaluate the Conference as thoroughly as we can by Saturday, but it will only be a preliminary evaluation. Where do we go from there? I think it should be enough to say that nothing definite can come before our various governments consider the results as we bring them back. As stated by the Conference Secretary, this is definitely not a decision-making Conference.

If you don't mind, I am going to be a Quebecer again. We make it complicated, but much more interesting. One thing we are pretty sure about is that any continuation of this Conference heading toward action, whether provincial or interprovincial, if we want to be realistic about it, will have to respect one very vital priority—money. As govern-



ments, we are all slicing up the same poor old guy who is the municipal, provincial and federal taxpayer, and *money* in this sense is a fighting word in Canada today.

Our basic position is well known, and it applies here, I think. Planning and development should start *opérateur*. That is, they should be conceived and implemented together, because the letter and the spirit of the Constitution seem to us to say that, especially in resources, we have to start at the provincial or regional level. At that level we are sure we need more money. Development means money, but how do we go about it without any shooting or without any more barriers? Here, as elsewhere, methods and procedure and mutual respect are essential, and they are complicated things to achieve. So we would simply say this: some revamping of sources of revenue, if need be some radical revamping, based on real needs of governments and on real priorities, is one urgent requirement for our Confederation. It is one, in fact, of the main conditions of a healthy survival of our national structure. Certainly it is essential for any practical long-range results from this and other comparable conferences.

(In conclusion, Mr. Lévesque summarized in French the highlights of the English portion of his address.)

### The Honorable J. W. Spooner

*Minister of Lands and Forests, Province of Ontario†*

We all know that the "Resources for Tomorrow" Conference is one of the very highest importance in the renewable resource field. It is impossible to single out any particular aspect of it on which I could comment without the risk of leaving out others of greater importance. So as to be brief, I must also be selective. The discussions that I have heard so far suggest that multiple use concepts are considered by most of us, whether we be in the field of technical experts or administrators, to be both important and difficult concepts with which to deal. The determination of the relative importance of different users and uses is preoccupying many of us and our friends who have not been able to attend this Conference.

In Ontario we are conscious of the importance of our agricultural, forest and water resources, our wilderness, and our recreational areas, and of the dependence of these on each other. I speak not only of government, but of many citizens' organizations having special interest in conservation such as—and I

am only naming a few—the Quetico Foundation and the Conservation Council of Ontario and its many member associations. By their probings and discussions they keep resource management in the forefront of our thinking.

I am pleased to see that the Agricultural Rehabilitation and Development Act of the federal government is framed to give assistance not just in agriculture but through development of other natural resources that are related to the farm economy. We hope, somewhat impatiently, for great things from this legislation, as an opportunity to establish proper relationships between agriculture, forestry, fish and wildlife, water and recreational resources.

In Ontario, we find that Crown lands which are a major concern in my Department, are used for mining, for wilderness areas, for hunting and fishing, camping, agriculture, parks and timber production. Sometimes, several of these uses are made of the same area at the same time. Elsewhere, one use may be more important than others. Where conflicting interests exist, difficult and sometimes unpopular decisions must be made. We have found that wise decisions are made more easily when we have a clear understanding of multiple use and if we have long-term plans.

The district forester in our organization makes plans for all the areas in his district. Provision is made for the requirements of all interested groups. Those plans, many of which look one hundred years ahead, are kept up to date with the help of other departments of government, industries and recreational groups that have an interest in resource management.

I must emphasize strongly the importance of long-range planning in resource management. Earlier this year, I had an opportunity to see results of such planning in Europe. I also saw the results of failure to plan. Those of you who have had the same experience and have seen the unmistakable contrast must agree with me, that we have no choice but to plan for the future. In Europe, you will have seen countries that are making intensive forest management plans. Our own foresters will confirm that foresters in Europe are doing excellent work. From my brief observations I feel that most European countries are using their forests more wisely than their other natural resources. Whatever the reason for this we can, and should, profit by their example.

In Europe, recreational use of resources does not appear to have received enough consideration. Good parks are scarce, when one considers the large populations. Wilderness areas exist for special purposes, particularly in Britain. Their program is excellent. On the other hand, the needs of people for recreational areas, are not being met. In Canada, the need for recreational areas is obvious now. The need

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is increasing rapidly, but fortunately, it is not too late to take effective action.

The growing and sale of wood is an important concern of our department. Forest industries employ many people. Their products are among our biggest exports, and therefore the state of the industry dependent upon them is important. Like many farmers, we know far more about growing and harvesting our crops than we practice. We know, for example, how to increase the yield of wood per acre. We must do more to apply our knowledge. Economists tell us that the world demand for forest products will double in less than twenty years. We assume with a confidence which may not be justified that our sales will double as well.

I must sound a clear warning: government and industry must act decisively and with vigor. We must plan for forest production in the right place and at the right price. We must give thought to where we can produce the wood most cheaply, whether by opening up new areas of forest in the far north, or by increasing the growth rate of the forest areas close to our mills and markets. In the one case, we must improve transportation, and in the other, we must intensify forest management.

We must remember also that we are faced with potential competition from the U.S.S.R., which has resources to grow and harvest more forest products than we can in Canada. Their products will compete directly with the lumber, and pulp and paper we sell on world markets. Canada and the U.S.S.R. are the only countries that can greatly increase their production from temperate coniferous stands. The U.S.S.R. may be able to meet the increase in world demand alone. We must not let them take our share. What is more, the U.S.S.R. can, if it wishes, sell at prices lower than our or their costs of production. We must grow, harvest and process our wood more efficiently so that, to undersell Canada will be costly and difficult, even for a totalitarian state. This applies also to fish and fur where we are already smarting from Soviet competition.

As well as vast forests on Crown lands, we have forests on private lands; most of them are small, but their potential growth and value are much greater than equal areas of Crown forests. Most of them are in the south where the climate and the soil permit a higher rate of growth, and they are close to markets. We have done little to improve the yield from private forests or to improve the marketing of their products. Some countries have tried to show landowners that it is in their own interest to manage their woodlots; other countries have tried to reach the same end by compulsion. In Ontario, we are studying both policies. Whatever course we take as a result of our analysis, will be a recognition that it is in the interest of the provincial economy to make

better use of private woodlands. Private landowners must see this too and act to prevent loss of their forest wealth.

Forest industries occupying Crown lands under license have of course been in a position very different from that of the private landowners. Their raw material is obtained from the Crown and they must abide by provincial legislation and their agreements with the government. These are the rules of the game. In Ontario, the ground rules may well be modified once more to assure that the productivity of our Crown forests will be maintained and improved. We shall require more silvicultural work by licensees to get regeneration, and are even now working on measures to be taken. It is our policy to move toward more efficient production and marketing from private woodlands and Crown forests, so that industries established to use the raw materials will have their supplies assured, and at the lowest possible cost.

Much has been said at this Conference about the place of research. Ontario conducts research in agriculture, water, forestry, fish, wildlife and fur-bearing animals. It contributes also to research done by the federal government in these fields. We have agreements with Canada, and have satisfactory working relationships with its proficient and obliging people. Nevertheless, I, for one, am not satisfied. It is in this field that the Government of Canada can make a better contribution. We, in the province should continue our work, but it should be mainly operational research for which short-term, clear-cut objectives can be defined. The federal government should expand its program, and acquire more rapidly the fundamental knowledge of natural resources. It is quite proper that we should be concerned about our research and our resource economics, our share of world markets, the best use of our water and recreational areas. These are components of a healthy economy.

But ladies and gentlemen, that is not all this Conference is concerned with. I must remind you of something even more important to us, now that the world has become so small. We are citizens not only of our provinces and of our Dominion, but of the world. We can, we must, grow food and wood to feed, clothe and shelter hungry people in other countries. We must provide paper by which the people of the world can be educated and informed. With our resources we can provide means to raise from poverty and illiteracy those who have great needs but cannot raise themselves by their own efforts alone.

It may be that the political crises of our time will submerge resource problems and resources. I ask that you show the way, for Canada's "Resources for

Tomorrow," should consider how our resources may be used to help the world.

**Mr. Paul G. Hoffman**

*Manager United Nations Special Fund†*

I am really very highly honored to be asked to make the closing address of what I have been told is a highly successful and eminently useful Conference on "Resources for Tomorrow." I know from what I have heard that you have learned a great deal at this Conference, but having had to attend many conferences dealing with resources, I have a suggestion to make. It is this: that this is to be regarded as the beginning and not the end, because I assure you that as you have explored this question of more effective use of resources, I am sure you have concluded at the end of the week that you have much to learn. And certainly that is the conclusion all of us have come to who have been trying to find ways to assist the poorer countries in their development. We are somewhat oppressed about how much we have to learn. There is, of course, a definite affinity between the Conference you have here, at which you are trying to find out how to make more effective use of the rich resources of Canada, and the work of the United Nations in the economic field, but there is this very great difference. It is very important—very important—that you find out how to make better use of your rich resources, but in the case of less-developed countries, of poorer countries, there is a desperate urgency about this task; we have not much time to lose.

I would like to talk about that later. But if I may, I would like to speak in rather general terms now about the United Nations, the situation today, because this is the last day of United Nations Week, and people all through the world are commemorating the rise of the United Nations. I think that we have, those of us in the Secretariat, regarded this as a very special anniversary because of the tragic death of Dag Hammarskjöld. We who had the privilege to work with him, I think, knew something of his true measure, and when news came of his death the shock was terrific. I think we were in a state of complete confusion. But I think you might be encouraged to know that after we had a chance to catch our breath, there was a decision made by all, and this applies to the messengers as well as the undersecretaries, and that decision was that we had to redouble our efforts to move toward the peace for which Dag Hammarskjöld died.

I can say to you in all sincerity that Canada has every right to be proud of its support for the United Nations. Whenever there has been a call, whether it was a call just for moral support, political support or economic support, Canada has been in the forefront of the nations that have responded. Not only that, but today, as we meet here in these peaceful surroundings, Canadian soldiers are on the Gaza Strip, helping to keep the peace in the Middle East. And in the Congo, another trouble spot, you have of course your Canadian technicians and members of your Air Force. Canada has made a very great contribution toward the progress that has been made in that situation. But quite apart from emergency situations of that kind, the U.N. has used some 350 Canadians in Technical Assistance Programs and has sent some 500 fellows from other underdeveloped countries to Canada for advanced studies. We in the Special Fund are just one of a number of agencies working in this field. We handle the larger projects, the projects for investigations of resources and projects for training institutions of various kinds. We have found Canadians most useful, because, as was evidenced by the introduction, many Canadians are bilingual and there are many French-speaking territories in which we find that Canadians are particularly useful. We also have found the Canadian engineering firms useful. So Canada has done its full part, and is doing its full part, in the support of the United Nations in every respect.

I must say that I take a very personal interest in one of the United Nations specialized agencies that is housed here in Montreal, and that is the International Civil Aviation Organization, because in the course of the last few years I have flown over two million miles, and I have flown in and out of some airports I wished I was not flying in and out of. And the fact that this agency has been able to do so much to make air travel safe should be, I think, a matter of great satisfaction, not only to people in Montreal, but also to people in all of Canada, because we find at our meetings with officials of the International Civil Aviation Organization that they consider themselves Canadians.

When Mr. Hammarskjöld took over as Secretary-General, there were 60 nations belonging to the United Nations. As of yesterday, there were 101, and I don't know whether there are 103 or not; they were voting last night on Mauritania and maybe there are 102 or 103 now. A good many people, since I have been on this trip, have been questioning me about whether the admission of all these small, admittedly less-developed countries has not weakened the United Nations. It has not weakened the United Nations, it has strengthened the United Nations, and I think I would like to tell you why.

† Address at luncheon tendered jointly by the eleven senior governments in the Grand Salon, Queen Elizabeth Hotel, Saturday, October 28, 1961.



In the first place, these small nations, and I think I can also include Canada in this, have shown a devotion to the U.N. that I sometimes wish was emulated by all the large nations. For the small nation, the U.N. is the one place where his delegate can speak with equal authority. In other words, no matter how small the country, the delegate of that country has a right to the floor, has a right to speak for his people, and it is the only place on earth in which this is true.

And second, I think also that devotion was shown in a very definite way last February, when the most crucial vote taken in the General Assembly was taken on the question of whether or not Mr. Hammarskjöld's authority in the Congo should be increased. This was a crucial vote. Remember, Mr. Hammarskjöld had been under the bitterest attack for a matter of weeks, and there was a feeling that perhaps these new countries, because of fear or for some other reason, would not vote for that resolution. When the vote was counted, there were eighty-three voting for Mr. Hammarskjöld, there were eleven against, and there were five abstentions, which again proves that when things get to a point of crisis, you can count on the small nations voting to strengthen the U.N.

And one thing I can assure you from personal observation and experience is that big countries do not have a monopoly on big men. If you take the history of the people who have really performed most useful services in the United Nations, you will find a high percentage come from the small countries, and if it were not for the United Nations, those big men from the small countries would never have the opportunity to use their wisdom and influence on behalf of all the countries of the world.

Next, the U.N.'s only power, in the political field, comes from the power of mobilizing world opinion. And it does not do any good to mobilize *half* the world opinion. If you really want world opinion to have a force, you have to organize all world opinion, and having the Asian and African countries in here means that world opinion has more influence. You may say, "But here we have an example, right at the moment, of the ignoring of world opinion on the part of the U.S.S.R." But don't forget for a moment that world opinion is influential, that the U.S.S.R. and the U.S.A. and the big countries spend hundreds of billions of dollars a year for the purpose of influencing it, and in time, in time, it has tremendous impact. It is going to have an impact. The vote—we had the vote just yesterday—of 87, I think, with 11 against and 2 abstentions—demanding that Russia shall not fire a 50 megaton bomb, is, in my opinion, a direct answer to the explosion of these bombs up to now, and it is going to have its effect, I believe. But, most important of all, you find among the small

nations a total commitment to peace, and this total commitment to peace does have a restraining influence on the larger powers when they are thinking about dangerous adventures.

You have also heard questions raised about the Congo operation, in which Canadian forces have played such an important part. The criticism comes only from people who do not understand what the United Nations was asked to do in the Congo. It was asked to undertake two tasks. First, to maintain order. It was not asked to take sides in a civil war, it was asked to prevent a civil war by maintaining order. It was asked to restore civilian services, which, before the withdrawal of the *Force Publique*, had been the duty of the *Force Publique*. The withdrawal of all the civilian Belgians from the Congo in July and August of last year left the Congo in a state of complete chaos. Those of you who may have been to the Congo know that the maintenance of order in the difficult circumstances and the restoration of civilian services is nothing short of a miracle, a miracle that is being performed in the Congo. That does not mean that the trouble is over. Almost the last thing that Secretary-General Hammarskjöld said to me when I asked him about the situation in the Congo was: "The situation is somewhat less grievous."

I have also been asked the question, because I have been in many parts of the United States in the last week, as to whether the United Nations would survive the present crisis. Well, I think it is worth taking a backward look to 1945, when the United Nations was organized in San Francisco. At that time no one questioned but that every nation in the world would give top priority to the achievement of peace. We had been through a terrible war and everyone felt that all nations would give top priority to the achievement of peace. That assumption was incorrect. Some countries did not give top priority to the achievement of peace; other ambitions took precedence. So the United Nations has had to operate in a polarized world. This I say to you out of a deep conviction, that what the United Nations has been able to accomplish is this: it has made a major contribution to the avoiding of World War III. Without the United Nations, I don't believe this could have happened. Without the United Nations, I don't believe we would have a chance of avoiding World War III at this time. Avoiding World War III is the first step toward an enduring peace. This is and has been, in my opinion, its great accomplishment. It has worked toward avoiding war and toward the achievement of peace in two ways.

First of all, it has tried quiet diplomacy to resolve conflicts, or what we might call put out fires—bush fires—that, if they are allowed to grow, might build

up into a dangerous conflagration. You all know that certain of these bush fires were put out—in Iran way back in 1946, at Suez a little later—but you don't know about most of the fires we have put out. I remember very well, when I first went to the United Nations and I heard of a conflict between two countries that was inherently very dangerous and that was resolved by the extraordinary diplomacy of Mr. Hammarskjöld. I felt this was something that should be publicized, the resolution of this conflict, and he said to me, "Of course we could not think of publicizing it." I said, "But why?" and he said, "For several reasons. First of all, it would embarrass the two countries involved if we publicized the fact that we had resolved the conflict. Second, the very publicizing of it might rekindle the flames we put out. And third, if we publicized what is accomplished in this way, other nations would be loath to come to the United Nations and ask us to use our good offices." So, by the very nature of the kind of work that has to be done in negotiation to resolve these conflicts before they get out of hand, you cannot learn about it, but I assure you that there have been many of them.

The second category is work aimed at abating the causes of those conflicts—in other words, fire-prevention activities. This is the kind of work we think we are doing in the economic field. Assisting these less-developed countries to develop is perhaps the principal form which that activity takes. Unlike those who work in the political field, those of us who work in the economic field would love to see our work publicized. We would love to have it known that at any given time, for instance at this moment, there are over 3,000 experts in the United Nations working in over a hundred different countries, trying to bring better health to people, to assuage hunger, to help find out what their resources are—the whole range of activities in which the U.N. engages. This work goes on day-in and day-out, but because no conflict is involved you almost never hear of it. Eighty per cent of the moneys flowing into the U.N. are devoted to assisting the less-developed countries and to speeding their development in the social and economic fields, 20 per cent to political activities and to administration. Ninety-five per cent of the publicity about the U.N. is about conflicts and debates in the General Assembly and the Security Council, and a very thin 5 per cent perhaps about the activities on which 80 per cent of the money is spent. In fact, when Mr. Khrushchev banged the desk in the General Assembly last fall, he got more publicity for that incident than all the economic activities of the U.N. have obtained in 16 years, which shows you the kind of problem you are up against when it comes to publicizing our constructive activities.

We have been somewhat encouraged because of the growing awareness of the significance of what Mr. Dinsdale spoke of as "the revolution of rising expectations." Ladies and gentlemen, I am telling you just the simple truth when I say that this is the most significant revolution in the history of man. Almost two-thirds of the world's people, whose forebears patiently accepted poverty, illiteracy and chronic ill-health as their lot in life because they did not even imagine they could do anything about it, are today in active revolt against the continued acceptance of lives of misery. You get some idea of the dimension of that problem when I tell you that, leaving China out of this—Red China, simply because Red China is not a member of the United Nations and therefore the United Nations has no responsibility as such for what happens in China today—leaving that out, there are still 100 countries and territories that by any definition are underdeveloped and in those countries today live 1,300 million people. You have a revolution here, as I say, of great dimensions, but the dimensions are only properly appraised when you consider the complexities that are involved in this task of helping these countries speed their development.

I said earlier, we all know now how much we have to learn. This was not true when we first started work of this kind in about 1949, because then our slogan was: we will export our know-how from the advanced countries to the less-developed countries and all will be well. A little later came a recognition that some investment might be required, and then slowly came a recognition of the great complexities of this task. And not only are there economic problems which we have to deal with, but you have psychological problems and you have problems of the social structure of the country. You have to consider the cultural pattern and background of the country. All those must be taken into account to make a sensible plan to assist those countries in their development.

I will just talk for a minute about what I mean, about the psychological situation. Take the attitude of people in many parts of the world toward work. We don't realize in how small a part of the world, work is regarded—and physical work particularly—as something of great dignity and therefore something to be respected. In most of these countries, in a great many of these countries, work, physical labor, has never been performed by men. Traditionally they have been the warriors and the fishermen and the hunters and politicians, and the women have done the work inside the house, outside the house, and carried on all the trade. That is true of most of the countries of Central Africa today. It is just be-



ginning to give way. Work was something regarded as disgraceful for a man to perform.

One of the common sights in Central Africa is to see a man walking down a path or a roadway, twirling his cane, quite well dressed, and behind him a woman with a wash-pan on her head, filled with all kinds of utensils or what-not, baby on her back, trudging along. The story is told that someone stopped this man and said, "Is that your wife who is carrying all that load behind you, and you are just walking along here with nothing in your hands?" The man replied, "Yes." The first man said, "Don't you think you ought to share her burden with her?" The husband asked, "Where are you from?" The reply was, "Great Britain." He said, "How much did you pay for your wife?" The Britisher said, "I didn't buy my wife." The husband replied, "I bought mine!" This is an attitude that, while it might seem to be an idyllic situation for men, is not one that is conducive to speeding economic development, because no one has figured out yet how you can bring about economic development in a country if the men don't go to work.

You also have an attitude toward savings that we have to contend with, because, over most of the world, the idea of saving for a better tomorrow has never been thought of. The only things they save for are jewellery and things that can be quickly converted to give a certain amount of security. Until you get a country—the people in the country, and the government of the country—in a frame of mind where the necessity of work and savings is realized, there cannot be economic development.

Similarly, if the social pattern of a country is such that any assistance given that country goes to make a few rich people richer, there is no point in going in with a program of economic aid. That is why the new U.S. program for South America holds such promise, because it does take into account, in the matter of distributing assistance, the question of whether the country's social structure is sound. So you have to take into account the social structure and you have to take into account the cultural background and the mores of a country. In other words, it does not do any good to say that in India all the cows that are running around should be killed, because they are not going to be. In other words, you have to accept the fact that this comes slowly, so to rush in with, say, a North American program for economic development that ignores the cultural background and traditions of a country makes no sense at all. It won't work.

Now I have tried to make it quite evident that this is no simple task. In other words, the task of assisting these countries in their development is a very complex task, one that we are just beginning

to learn something about. The encouragement comes from this fact: that the underlying reason for underdevelopment for 90 out of 100 of these countries can be stated very simply and very quickly. It is underutilization of their physical and human resources. The physical and human resources are present in at least 90 of these 100 countries to assure the people a comfortable living. So the question is simply one of how you make more effective utilization of these physical and human resources.

For example, take the use of land and water, water particularly. Most of the great rivers that run through these less-developed countries have been little used. Recently I was in Nigeria. The Niger river has been flowing since time began. Its waters have only been used to provide irrigation for land right close by the river itself. Special Fund is just completing a survey, through the World Bank, of the possibility of building a 150 ft. dam about a hundred miles north of Lagos. The survey is just about completed. It is perfectly feasible. That dam, when built, will create a lake 70 miles long and 15 miles wide. It will bring into cultivation hundreds of thousands of acres that are fallow today. It will begin to solve the entire food problem of Nigeria. The river has been there. It will also provide Nigeria with about the cheapest power available anywhere. That resource has been there.

One more quick illustration of an agricultural situation. A group of eminent agronomists who went to India with the Ford Foundation about three years ago said India, as far as land and water was concerned, had the resources not only to feed her present population well, but a population twice its size. She is presently importing millions and millions of dollars worth of food. The answer there is more fertilizers. She must build fertilizer plants, have better seed, and perhaps make a revision of her land tenure system. The resource is there. Go on to Ethiopia, which is a country where most of the people live in abject misery, a few live in great luxury. But I assure you that from the standpoint of water, the standpoint of land, resources are there for a very good living for the people, all the people of Ethiopia.

Now take the matter of minerals. One thing has come in, and your Canadian companies here are very skilful in this. It is possible now, with low-flying airplanes and modern instrumentation, to fly over a country and prospect for minerals—prospect a hundred square miles in less time than it would take to prospect one square mile by old methods. We are just completing a survey in northern Chile that looks as though it is going to indicate the presence of some \$300 million worth of minerals, the presence of which will obviously greatly influence that economy. I will simply sum up by saying this, that as far as physical resources are concerned, it is no



problem to find out what these countries have. The techniques are known and are constantly improving. The whole problem is one of time and money. Give us enough money and a reasonable amount of time, and we can tell any country what it has in the way of physical resources.

But perhaps the most important thing we have learned in the last few years is that what all of the eminent Ministers have been saying in Canada, what they all have been saying all through the world, namely that the greatest resource of any country is the human resource, happens to be true. And this is something we overlooked. In other words, the money went into just technical know-how, into investments, into billions of investments, without having available in those countries trained people to make effective use of those resources. We have learned now that we have a tremendous job of education to do before they can really make the progress they should. And this cannot be done overnight. In other words, of this 1,300 million people I am talking about, I would say that 750 million still can't read or write. From the standpoint of nutrition I would say that fully half of them are undernourished—go to bed hungry every night. I would say that their average span of life is under forty years. That will give you some idea of what kind of a job has to be done in these various fields.

The thing to do is to get on with it. I won't take too much time, because it would take an hour to tell you what has to be done. I happen to believe that perhaps the most important of all enterprises that should get underway quickly is a very-well-financed research institute to work out new ways of imparting knowledge and skills to a people, because we cannot possibly, in reasonable time, supply the 475,000 teachers that Africa alone requires. We have to find innovations and inventions. I am sure that, necessity being the mother of invention, if we do put research institutes in Africa, if we export our money for that purpose, we may very well be importing back to the North American continent the knowledge that comes out of that research institute. We hope such an institute will be established in Africa before too long.

In the 1950's, which was the first decade when any effort was made to improve the lot of these 1,300 million people, their personal income went up, about one per cent net a year. You cannot trust the dollar figures. They do not mean much, because the pattern of life is different and the rupee oftentimes will buy as much for an Indian as a dollar will for an American, either in Canada or the U.S.A. But statistically the income of these people, their average income in 1950, was \$90. In that decade, the same decade that the annual average American income went up by \$500, the income of these people went up

\$10. They got to a hundred. Now the minimum goal, the *minimum* goal for the 1960's—what President Kennedy has called the U.N. development decade—has to be 25 per cent. I think 25 per cent is a minimum.

Now I am not saying that for moral reasons. I think that there are profound moral reasons, but there are also some compelling political reasons. And the compelling political reasons I can crowd into one sentence: How many more Cubas do we want? And there are 50 potential Cubas among these 100 countries. The evolutionary process is the only process that brings real progress. The revolutionary process does not; the revolutionary process sets countries back, but they are going to try revolution unless the evolutionary process is made more dynamic and produces results.

There are also good sound business reasons for that 25 per cent objective. At the present time these countries are buying in advanced countries about \$160 billion of goods per year, goods that they must have to bring about their own development. If you get even that 25 per cent increase, you will double the amount of exports. To the United States alone it means \$7 billion more exports. So, apart from profound moral reasons and the compelling political reasons, there are good sound business reasons why we should realize that, in this rapidly shrinking world, we had better be very much concerned about what is happening in these less-developed countries.

To bring about that 25 per cent increase, I think there are certain conditions that have to be met, and the first condition I would say is this: we have to get completely over the notion that assistance to the less-developed countries is charity. As long as it is considered charity, you will not get results from the people who are receiving the aid, because mendicants do not make good pioneers. As a matter of fact, it is not charity. As I said earlier, it is good business, and if it is good business, for Heaven's sake let us realize we are all partners together in what should be, as one of the speakers said before, next to peace itself our major goal; that is the achievement of a rapidly expanding world economy. No country is so rich that it doesn't profit from a rapidly expanding world economy, and no country is so poor that it can't help another country, as has been proven day by day. And second in importance, we must get over all notions that economic assistance to less-developed countries is a legitimate instrument in the cold war. It does not belong. Cold war has nothing to do with development, because if there were no cold war, it would still be terribly important to see these countries progress.

We have a job to do, let's face it. And I assure you that there is no chance of getting this job done

unless we do concentrate on the one goal. If I may, I would like to refer back to the Marshall Program for just a moment, because here we are dealing with a recovery problem. Recovery is obviously much simpler than development, and yet the guidelines to the whole Marshall Program, which was successful, were laid down by General Marshall in his speech at Harvard, when he said that our policy was directed not against any country or doctrine, but against poverty, desperation and chaos. Our purpose is to provide a climate in which free institutions can survive. If, 10 or 15 years ago, we had approached assisting these countries in that spirit; if we had said: "Our purpose, our policy is not directed against any country's ideology but against hunger and poverty and illiteracy"; if we had said, as far as war is concerned: "No one wants a hot war, we want no part of a cold war, except a war against poverty and illiteracy. Any country that is sincerely waging that kind of a war, we of the advanced countries want to assist"—if that had been the spirit, I don't think we would be concerned with some of the things we are concerned with today. But we must not repeat the errors of the past in the 1960's if we hope to succeed.

Now, speaking of more technical things, one thing we must get underway is new emphasis on program and planning, the kind of activity you have engaged in all week, because these countries, unless they have adequate program and planning bureaus, cannot determine their priorities. If they don't know what their priorities should be, they are so apt to build new government buildings, new palaces for the new presidents, spend their money in the wrong way. But if you have a sound program and planning bureau, they get their priorities right. I happen to believe also that it is extremely important to put more money into pre-investment activities. By that I mean simply investigations of physical resources, the establishment of training institutes, the establishment of institutes to train high-school teachers, because high schools are the great need in most of these countries, more high-school graduates. In Africa, out of a very limited number of children who go to grammar school, less than 5 per cent go on to high school. You could not hope for development in Canada unless you had most of your children go to high school, and therefore you have to step up the number of high-school students.

When it comes to the matter of investment, I think again we must be prepared to put in more investment. I would like to say also that, if we applied a pragmatic approach to how aid should be channeled, a good deal more would go through the United Nations. This isn't because the international civil servants in the United Nations are smarter than the

national servants who would serve in the case of a bilateral program—not at all. I have administered both types of programs and the great advantage you have, as far as the multilateral program is concerned, is this: the recipient country knows that you are seeking no political, military or commercial advantage. They know that the only conditions you will impose will be conditions that are necessary to help that program succeed.

I have been asked oftentimes if I believe in strings on aid. I said I do not believe in military strings or political strings. When it comes to economic strings, I believe in ropes. In other words, I believe the conditions should be set forth very firmly and the aid should be administered in a businesslike way, because otherwise it won't succeed. And the simple test, a test we apply on our Special Fund projects, is to what extent a country is willing to help itself, because you can only help in those situations where people are determined to help themselves. So when they come to us with a project, we say first of all: what will you do for yourself? And if they tell us, we will negotiate that. We have now approved projects totalling some \$300 billion, to which we are contributing \$130 billion and the countries themselves \$170 billion. This is the acid test. This is something you have to recognize, that this business of aid, while the purpose I think is noble, has got to be handled in a businesslike way or you don't get your money's worth.

But you will find in the United States and Canada and Great Britain and France and the Federal Republic of Germany the idea persisting that they must tag every bit of aid they send, send it out bilaterally so they get full credit. In that way you don't get credit. I don't say there is no room for bilateral programs, there is. But the test should be: How can we get the most development per dollar? How can we have it made most effective? And until we come to use that test, we will continue, in my opinion, to waste billions, because out of the \$30 billion that flowed from the advanced countries to the less-developed countries in the 1950's, my guess—it is a sheer guess—is that something like \$5 billion to \$10 billion were wasted because of a wrong motivation and a wrong approach. We can't afford it from any standpoint in the 1960's because this goal must be achieved.

You may feel, when I suggested an increase from \$100 to \$125 in personal income, that this is too modest a goal, but it conceals some very exciting possibilities. The exciting possibility is this, and I could name the countries if I wanted to: there are 20 countries where conditions are favorable today and where external aid—if properly applied under

the right internal conditions—can make it possible for—the people to move from poverty to comfort. There is nothing this world needs so much. As examples, in South America, in the Middle East, in Asia, there are countries which, under free institutions, have seen the movement of their people from poverty to comfort. If we can get that momentum in the 1960's—and we can, if we go at it, get that momentum—that momentum will carry us through the 1970's, it will carry us through the 1980's, and by the time the year 2,000 rolls around,

I think—and I am speaking soberly—I think that we will have seen the end on the face of this earth of grinding poverty, illiteracy and chronic ill-health. And if that goal is achieved, then those of us who live in this century can say it has been a very good century indeed.

In closing, may I commend you again for what I consider to be a most significant and important conference, but let me remind you it is only the first of many conferences, and the follow-up of what you have learned this week is all important.





## *Appendices*





**CONFÉRENCE NATIONALE  
SUR LES  
RESSOURCES RENOUVELABLES**

**LES 23-28 OCTOBRE 1961**

**HÔTEL REINE-ÉLISABETH  
MONTREAL**

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**Les ressources et notre avenir  
Resources for Tomorrow**

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**A NATIONAL CONFERENCE  
ON  
RENEWABLE RESOURCES**

**OCTOBER 23-28, 1961**

**QUEEN ELIZABETH HOTEL  
MONTREAL**

**LUNDI 23 OCT. MONDAY**

**OPENING CEREMONIES—SÉANCE D'OUVERTURE 9:15 A.M.**

**GRAND SALON**

Chairman—*Président*—Hon. WALTER DINSDALE, P.C., M.P.

His Excellency Major General GEORGES P. VANIER, D.S.O., M.C., C.D.  
Governor General and Commander-in-Chief of Canada

JEAN DRAPEAU, C.R., le maire de Montréal

**PLENARY SESSIONS—RÉUNIONS PLÉNIÈRES**

**GRAND SALON**

**HISTORICAL PERSPECTIVES AND EXPECTATIONS OF THE CONFERENCE  
LES OBJECTIFS DE LA CONFÉRENCE DANS LA PERSPECTIVE HISTORIQUE  
10.00—10.30 A.M.**

Speaker—*Conférencier* Hon. WALTER DINSDALE, P.C., M.P.  
Minister of Northern Affairs  
and National Resources;  
Chairman, National Steering Committee,  
“Resources for Tomorrow” Conference

**RESOURCES AND GROWTH IN CANADIAN ECONOMY  
L'APPORT DES RESSOURCES À LA CROISSANCE DE L'ÉCONOMIE CANADIENNE  
10:30 A.M.—12 P.M.**

Chairman—*Président* ERIC W. KIERANS  
President  
Montreal Stock Exchange

Speaker—*Présentateur* Prof. W. T. EASTERBROOK  
Chairman, Department of Political Economy  
University of Toronto

Discussants—*Animateurs* Prof. J. J. DEUTSCH  
Vice-Principal (Administration)  
Queen's University

ANDRÉ RAYNAULD,  
professeur à la faculté  
des Sciences économiques  
de l'université de Montréal

**LUNDI 23 OCT. MONDAY****PLENARY SESSIONS—RÉUNIONS PLÉNIÈRES—1:30—5:00 P.M.****GRAND SALON****FACTORS CONDITIONING GROWTH  
LES CONDITIONS DE CROISSANCE**

Chairman—*Président* RODERICK HAIG-BROWN  
Magistrate  
Campbell River, B.C.

**PHYSICAL FACTORS  
LES FACTEURS NATURELS**

Speaker—*Présentateur* Prof. F. KENNETH HARE  
Chairman, Department of Geography  
and Meteorology McGill University

Discussants—*Animateurs* Dr. N. L. NICHOLSON PIERRE DAGENAIS,  
Director, Geographical Branch professeur à la faculté de la  
Canada Department of Mines and Géographie de  
Technical Surveys l'université de Montréal

**SCIENTIFIC TECHNOLOGICAL FACTORS  
LES FACTEURS SCIENTIFIQUES ET TECHNIQUES**

Speaker—*Présentateur* Dr. ÉDOUARD PAGÉ,  
doyen à la faculté des Sciences  
de l'université de Montréal

Discussants—*Animateurs* Prof. J. T. WILSON Dr. N. H. GRACE  
Director, Institute of Earth Sciences Director of Research  
Department of Geophysics Alberta Research Council  
University of Toronto

**ADMINISTRATIVE—JURISDICTIONAL FACTORS  
L'ASPECT ADMINISTRATIF ET JURIDICTIONNEL**

Speaker—*Présentateur* Dean W. R. LEDERMAN  
Faculty of Law  
Queen's University

Discussants—*Animateurs* PIERRE-ELLIOTT TRUDEAU, Prof. HUGH J. WHALEN  
économiste de Montréal Department of Economics and  
Political Science  
University of New Brunswick

**ECONOMIC FACTORS  
LES FACTEURS ÉCONOMIQUES**

Speaker—*Présentateur* Prof. W. C. HOOD  
Department of Political Economy  
University of Toronto

Discussants—*Animateurs* Prof. YVES DUBÉ, Prof. J. F. GRAHAM  
directeur du département Department of Economics  
d'économie à la faculté Dalhousie University  
des Sciences sociales de l'université Laval

**BANQUET 8:00 P.M.****GRAND SALON**

HOST—GOVERNMENT OF CANADA  
OFFERT PAR LE GOUVERNEMENT DU CANADA



# MARDI 24 OCT. TUESDAY

## WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.

### SALLE

#### AGRICULTURE

- |    |  |          |
|----|--|----------|
| A. | Undertaking physical works for land maintenance and improvements.<br><i>Les travaux matériels nécessaires à la conservation et à l'amélioration de la terre.</i>   | I.C.A.O. |
| B. | Withdrawing submarginal lands from agriculture and shifting to higher uses.<br><i>Soustraire à l'exploitation agricole les terres de productivité sous-marginale pour les utiliser à des fins rentables.</i> | I.C.A.O. |

#### FISHERIES—LA PÊCHE

- |    |   |            |
|----|---|------------|
| A. | Maintaining adequate stock.<br><i>Maintenir la population de poissons en quantité suffisante.</i>   | ROOM 350   |
| B. | Attaining more efficient operations in the fishing industry.<br><i>Accroître l'efficacité de l'exploitation dans l'industrie de la pêche.</i> | BOARD ROOM |

#### FORESTRY—LA FORÊT

- |    |  |             |
|----|--|-------------|
| A. | Improving the environment (administrative, jurisdictional and economic) within which substantial increase in output of forest product may be obtained within competitive cost limits.<br><i>Améliorer les cadres (administratif, juridictionnel et économique) en vue d'obtenir un accroissement considérable du rendement de la production forestière dans les limites des prix concurrentiels.</i> | GATINEAU    |
| B. | What adjustments in management will be required to hold costs at competitive levels under pressure of greatly increased production requirements?<br><i>Les changements à apporter à la gestion forestière pour maintenir des frais au niveau concurrentiel en face des exigences croissantes de la production.</i>   | GRAND SALON |

#### RECREATION—L'USAGE RÉCRÉATIF

- |    |  |             |
|----|--|-------------|
| A. | Providing an adequate resource base for public recreation.<br><i>Affecter une partie suffisante des ressources à l'usage récréatif du public.</i>  | ST. MAURICE |
| B. | Devising and implementing recreation programs for a more effective utilization of renewable resources.<br><i>Imaginer et mettre en œuvre des programmes récréatifs qui nous permettent de tirer un meilleur parti des richesses renouvelables.</i> | GRAND SALON |

MARDI 24 OCT. TUESDAY

## WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.

## WATER—L'EAU

## SALLE

- |  |             |
|--|-------------|
| A. Organizing for multi-purpose development in river-basins.<br><i>Les mesures nécessaires pour mettre en valeur les bassins hydrographiques à des fins multiples.</i> | HARRICANA   |
| B. Benefit Cost Analysis.<br><i>L'analyse profit-coût.</i>   | MATAPEDIA   |
| C. Achieving effective pollution control.<br><i>Comment lutter efficacement contre la pollution des eaux.</i>  | GRAND SALON |

## WILDLIFE—LA FAUNE

- |  |             |
|--|-------------|
| A. Maintaining adequate habitat for the production of ideal wildlife populations.<br><i>Maintenir un habitat approprié à une population de faune idéale.</i> | CHAUDIÈRE   |
| B. Attaining effective utilization of wildlife.<br><i>Pour une utilisation effective de la faune.</i>  | GRAND SALON |

## URBAN GROWTH AND RESOURCES—L'EXPANSION URBAINE ET LES RESSOURCES

- |   |             |
|---|-------------|
| A. Providing for urban growth without wasting agricultural land and other renewable resources.<br><i>Assurer l'expansion urbaine sans gaspiller la terre agricole ni d'autres ressources renouvelables.</i> | ST. LAURENT |
| B. The control of air pollution generated by the growth of cities.<br><i>La lutte contre la pollution de l'air due à la croissance des villes.</i>  | GRAND SALON |

## FILMS—8:00 P.M.

The première showing of the new N.F.B. film A LAKE FOR THE PRAIRIE will be given. Another resource management film, DEADLY DILEMMA will also be shown. There will be a discussion period.	MARQUETTE JOLLIET
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*La première du nouveau film «A Lake For The Prairie» enregistré par l'Office national du film aura lieu. Un autre film concernant la gestion des ressources «Deadly Dilemma» sera aussi projeté. Il y aura une discussion.*

Chairman—Président	S. S. PETERS Deputy Minister of Resources Department of Mines, Agriculture and Resources St. John's, Newfoundland
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Discussants—Animateurs	J. W. MACNEILL Executive Director South Saskatchewan River Development Commission, Regina, Saskatchewan
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Dr. A. P. ARNASON  
Associate Director of Programme  
(Entomology and Plant Pathology)  
Research Branch  
Canada Department of Agriculture

**MERCREDI 25 OCT. WEDNESDAY**

**WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.**

**MANAGEMENT—LA GESTION**

**SALLE**

- |   |                                    |
|---|------------------------------------|
| <p>A. Directing management to more effective multiple use of renewable resources on a continuing basis.<br/><i>La gestion orientée vers une utilisation plus efficace, à des fins multiples, de nos ressources renouvelables, selon une ligne de conduite constante.</i></p> <p>B. To get better co-ordination of public and private decisions.<br/><i>Pour mieux coordonner les décisions des autorités publiques et des entreprises privées quant à la gestion.</i></p> | <p>ST. LAURENT</p> <p>I.C.A.O.</p> |
|---|------------------------------------|

**RESEARCH—LA RECHERCHE**

- |  |                                    |
|--|------------------------------------|
| <p>A. To determine the more important deficiencies in the scope of present research programs in meeting problems under discussion.<br/><i>Relever les plus graves lacunes des programmes actuels de recherche, en regard des problèmes à résoudre.</i></p> <p>B. Are there important deficiencies in the way in which research activities are organized?<br/><i>Y a-t-il des lacunes importantes dans le mode d'organisation des travaux de recherche?</i></p> | <p>GRAND SALON</p> <p>I.C.A.O.</p> |
|--|------------------------------------|

**JURISDICTION—LA JURIDICTION**

- |   |                  |
|---|------------------|
| <p>To determine the degree to which the B.N.A. Act in fact limits resource development. The reduction of jurisdictional uncertainties to facilitate improved resource development.<br/><br/><i>Préciser jusqu'à quel point l'Acte de l'Amérique du nord britannique restreint le développement de nos ressources. Comment élucider les doutes d'ordre juridictionnel afin de favoriser une meilleure gestion de nos ressources?</i></p> | <p>CHAUDIÈRE</p> |
|---|------------------|



**MERCREDI 25 OCT. WEDNESDAY****WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.****ADMINISTRATION****SALLE**

- |    |   |             |
|----|---|-------------|
| A. | How do we improve interdepartmental co-operation for more effective resource management?<br><i>Comment améliorer la collaboration entre les ministères en vue de rendre plus efficace la gestion de nos ressources?</i> | ST. MAURICE |
| B. | Getting longer term perspectives and plans in the administration of renewable resource programs.<br><i>Prévoir des plans à longue portée pour la mise en valeur des richesses renouvelables.</i>                        | ST. CHARLES |

**INFORMATION—EDUCATION—L'INFORMATION, L'ÉDUCATION POPULAIRE**

- |    |   |           |
|----|---|-----------|
| A. | To define the content of information-education programs that would be adequate in solving problems under discussion.<br><i>Définir la teneur d'un programme d'information et d'éducation populaire qui soit conforme à la solution des problèmes à l'étude.</i>                             | MATAPEDIA |
| B. | Reaching the public considered in problems under discussion with the necessary information-education material.<br><i>Pour atteindre le public (qu'on a en vue dans la discussion des problèmes soulevés) par la documentation voulue en matière d'information et d'éducation populaire.</i> | GATINEAU  |

**JEUDI 26 OCT. THURSDAY**

**WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.**

**URBAN-CENTERED REGIONS—LES RÉGIONS À CENTRE DE GRAVITÉ URBAIN**

**SALLE**

- A. Controlling the impact of urban growth on resources.  
*Pour atténuer les répercussions de l'expansion urbaine sur les ressources.*
- B. The evolution of governmental processes to meet the challenge of regional development.  
*Adapter l'administration publique aux exigences du développement régional.*

**GALERIE 3**

**SAGUENAY**

**RIVER VALLEY REGIONS—LES RÉGIONS DE BASSIN GÉOGRAPHIQUE**

- A. The scope for multiple resource development within river basin regions.  
*La portée de l'utilisation des ressources à des fins multiples pour le développement des bassins hydrographiques.*
- B. The evolution of government processes for multiple resource development within river basin regions.  
*L'évolution de l'administration publique pour les besoins de la mise en valeur des ressources à des fins multiples, dans les régions de bassin hydrographique.*

**ST. LAURENT**

**GALERIE 2**

JEUDI 26 OCT. THURSDAY

## WORKSHOP SESSIONS—SÉANCES D'ÉTUDE—9:00 A.M.—5:00 P.M.

## BROAD ECONOMIC REGIONS—LES GRANDES RÉGIONS ÉCONOMIQUES

## SALLE

- A. Potentialities of the regional approach to resource use and development.  
*L'avantage d'aborder l'utilisation et la mise en valeur des ressources à l'échelle régionale.*
- B. The experience of the regional approach.  
*Expérience du développement des ressources à l'échelle régionale.*

HARRICANA

RICHELIEU

## FRONTIER REGIONS—LES RÉGIONS DE FRONTIÈRE

- A. Resource development, communities and social capital in frontier regions.  
*Mise en valeur des ressources, développement communautaire et capital social dans les régions de frontière.*
- B. Planning for a diversified economic base in frontier regions.  
*Organiser le développement sur une base d'économie diversifiée dans les régions de frontière.*

PERIBONCA

ST. CHARLES

## BANQUET—8.00 P.M.

Reception 7:15 P.M.

GRAND SALON

Host—Governments of Ontario and Quebec  
*Offert par les gouvernements de l'Ontario et du Québec*



**VENDREDI 27 OCT. FRIDAY****WORKSHOP REVIEWS—RÉCAPITULATION DES TRAVAUX—9:00 A.M.—NOON SALLE**

Tuesday workshop sessions will reconvene  
*Continuation des séances d'étude de mardi*

**CONCURRENT SESSIONS—SÉANCES SIMULTANÉES 2:00—5:00 P.M.**
**CAPITAL REQUIREMENTS FOR RESOURCE DEVELOPMENT**  
**LES CAPITAUX NÉCESSAIRES À LA MISE EN VALEUR DES RESSOURCES**
**MARQUETTE**

- |                              |   |  |
|------------------------------|---|--|
| Chairman— <i>Président</i>   | DOUGLAS GIBSON<br>General Manager<br>Bank of Nova Scotia, Toronto                             |  |
| Speaker— <i>Présentateur</i> | M. W. MacKENZIE<br>President<br>Chemcell Limited, Montreal                                    |  |
| Panel— <i>Table ronde</i>    | RENÉ TREMBLAY,<br>sous-ministre au ministère<br>de l'Industrie et du Commerce<br>du Québec    | G. F. PUSHIE<br>Director-General<br>Department of Economic Development<br>Government of Newfoundland |
|                              | Dr. JOHN DAVIS<br>Director of Research and Planning<br>British Columbia Electric Company Ltd. | D. H. F. BLACK<br>Deputy Minister<br>Saskatchewan Department of Industry<br>and Information          |

**INCOME AND EMPLOYMENT EFFECTS OF RENEWABLE RESOURCE DEVELOPMENT**  
**LES CONSÉQUENCES DU DÉVELOPPEMENT DES RESSOURCES SUR LE REVENU ET L'EMPLOI**
**JOLLIET**

- |                              |  |  |
|------------------------------|--|--|
| Chairman— <i>Président</i>   | JEAN MARCHAND,<br>président de la Confédération<br>des syndicats nationaux     |  |
| Speaker— <i>Présentateur</i> | W. R. DYMOND<br>Assistant Deputy Minister<br>Canada Department of Labour       |  |
| Panel— <i>Table ronde</i>    | J. A. ROBERTS<br>Deputy Minister<br>Canada Department of Trade<br>and Commerce | DALTON ROBERTSON<br>Associate Editor<br>The Financial Post               |
|                              | MAURICE LAMONTAGNE,<br>économiste de l'université d'Ottawa                     | DONALD E. ARMSTRONG<br>Director, School of Commerce<br>McGill University |

**RECEPTION—6:00 P.M.****MOUNTAIN  
CHALET**

Host—City of Montreal  
*Offerte par la Cité de Montréal*

**SAMEDI 28 OCT. SATURDAY**

**SALLE**

**GRAND SALON**

**PLENARY SESSION—RÉUNION PLÉNIÈRE 9:00—11:30 A.M.**

**RENEWABLE RESOURCES AND CANADA'S FUTURE  
LES RICHESSES RENOUVELABLES ET NOTRE AVENIR**

Chairman—*Président* JEAN LESSARD,  
président de l'Hydro-Québec

Panel—*Table ronde* DONALD M. STEPHENS  
Chairman  
Manitoba Hydro-Electric Board

V. W. BLADEN  
Dean of Arts and Science  
University of Toronto

F. L. MITCHELL  
General Manager  
Canadian Pulp & Paper Association

T. K. SHOYAMA  
Secretary  
Economic Advisory and Planning Board  
Government of Saskatchewan

**NOON LUNCHEON—DÎNER À MIDI**

**GRAND SALON**

Host—Steering Committee  
*Offert par le Comité de régie*

Main Speaker—*Présentateur principal* PAUL G. HOFFMAN  
Managing Director  
United Nations Special Fund





# Statements by Research Co-ordinators

## Research Co-ordinators' Joint Statement

The Conference affirmed the following needs:

1. To complete a country-wide assessment of resource supplies which may be set against long-term assessment of resource needs.
2. To make possible systematic studies of:
  - (a) Problems of resource management and development in all fields; and
  - (b) Economic potentials and social needs in all regions.
3. To recognize that, because of the vital, inseparable relationships between resources, their most beneficial use and development depends upon a co-ordinated administrative approach both within and between provinces.
4. To explore new forms of co-operative action for resource-based economic development between provincial governments and between federal and provincial governments.
5. To recognize that both short- and long-term national income and employment will be substantially influenced by the resource management, development and planning policies of each of the eleven governments.
6. To recognize that we must obtain the maximum returns from our natural renewable resources by giving balanced consideration to both direct economic aspects and environmental aspects, with adequate attention to recreation and leisure-time needs.
7. To recognize that the unprecedented concentration of population in urban-centered regions calls for special attention in each province to areas of heavy pressure on land, water and air and on unique and irreplaceable recreational and environmental resources.
8. To recognize that further development of the country by opening up frontier regions offers the dual challenge of building in each region (a) a stable economic base and (b) attractive communities.
9. To continue co-operative action by the eleven governments for the purpose of:
  - (a) Formulating the principles of a national renewable resources policy;

- (b) Assessing development plans for the large interprovincial river basins and recommending appropriate financial and administrative arrangements;
  - (c) Providing a clearing house of information; and
  - (d) Pooling the limited supply of personnel for the study of resource problems.
10. To provide democratic bases of action in all these spheres, including:
  - (a) Administrative structures that provide full opportunity for consultation with interests and regions concerned;
  - (b) Programs of public information and education that interpret resource policies; and
  - (c) Formation of local committees to participate in planning resource developments in their own areas.

To fulfill the possibilities opened up by the Conference, nationally, federally and provincially, we suggest that:

1. The federal government establish an interdepartmental resources council to co-ordinate its resource policies and programs.
2. Each provincial government establish an interdepartmental resources council to co-ordinate its resource policies and programs.  
(Boards or councils representing non-governmental interests on a provincial, regional or national basis should be separate from the proposed councils. In this regard the pattern established by the Ontario Conservation Council merits the fullest consideration).
3. The National Steering Committee be reconstituted, with a rotating chairmanship and with a secretariat responsible to all governments jointly.
4. The first concerns of the reconstituted Committee be:
  - (a) To consider the best means of establishing and co-ordinating the recommended resource research and inventory program;
  - (b) To identify areas of unique and irreplace-

able recreational and agricultural lands which require protection by senior governments;

- (c) To delineate the basic economic regions, and consider the forms of organization and ac-

tion required to examine the problems and potentials of all the regions of the country;

- (d) To define the requirements for nation-wide information-education services and a suitable program.

## RESEARCH CO-ORDINATORS' INDIVIDUAL STATEMENTS

### REGIONAL DEVELOPMENT

by L. O. Gertler and Gavin Henderson

#### URBAN GROWTH AND RESOURCES AND URBAN-CENTERED REGIONS

##### PROBLEMS:

1. Losses of good farm land by growth of towns and cities are irreversible, and we do not know for certain that, as a nation, we can afford these losses.

2. Present patterns of urban development are high-cost patterns, and create unsatisfactory communities.

3. The preservation of natural park lands and the expansion of recreation facilities is not keeping pace with the accelerating concentration of population into urban-centered regions.

4. The indirect effects of urban growth—the urban shadow—greatly compound the threat to such unique national assets as the Niagara fruit belt.

5. There are serious gaps in the stock of systematic information and knowledge essential for the sound development of our urban-centered regions.

##### GOALS:

1. Effective *regional planning* is needed in every province of Canada.

2. *Unique assets*—such as the Niagara fruit belt, and irreplaceable recreational assets in areas of high population pressure—need to be *protected* now by senior governments.

3. *Research* into a wide range of urban and regional problems needs to be established on a systematic basis.

##### GUIDELINES:

###### *Provincial*

1. Provincially initiated *regional planning* should, in any part of the country, embody four broad features:

- (a) Survey and analysis should cover the entire urban-centered region;
- (b) Results should be communicated to a body that can co-ordinate and put policies into effect;
- (c) Those responsible for implementation must be identifiable and responsible to the electors;
- (d) Statutory authority must be provided.

2. *Provincial plans* are required to provide a broad framework for regional development and planning and to co-ordinate the manifold development functions of the provinces.

###### *Joint federal and provincial*

3. *Emergency situations*, such as the possible disappearance of unique and irreplaceable recreation and agricultural resources call for action at the earliest possible date by senior governments. Possible measures: outright purchase, compensation for “freezing” development of land, leasing, etc.

###### *Federal or joint federal and provincial, universities, industry, organizations*

4. Many of the *research* problems would be substantially met by the adoption of the proposal of the *Research Workshop*—establishment of a “Renewable Resources Research Council.” In addition, support is given to the recently proposed “Canadian Council of Urban and Regional Research.”

Among the more specific “research” requirements are studies to:

- (a) Establish the costs of different forms and densities of urban development;
- (b) Establish the location, amount, and nature of agricultural land being forced out of productive use;
- (c) Set up a quinquennial air-photo census.

###### *Federal*

5. There is a need to complete for major urban-centered regions the land use sheets produced by the Geographical Branch, Department of Mines and Technical Surveys.

###### *Private organization*

6. The Tax Foundation should study taxation and assessment problems connected with urban growth and resources. These problems include the effect of the property tax on urban blight, and the effect of land assessment on the use of farmland around towns and cities.

## URBAN GROWTH AND AIR POLLUTION

## PROBLEMS:

1. While many air contaminants can be identified, measured and controlled, many cannot with our present store of knowledge. It is known that air pollution bears a relationship to the deterioration of health, buildings and other exposed materials, and plant life. Much more needs to be learned with respect to both the cause and effect of air pollution, the interaction of substances and ways and means of instituting reasonable controls.

2. No generally acceptable method of approach in determining the cause, identification and control or prevention of air pollution emerged from the discussion although it was evident that it is essential and possible to develop and establish such methods.

3. No clear division of areas of responsibility emerged as between government and private interests and the institutional disciplines concerned such as engineering, town planning, public health, climatology, meteorology, etc.

## GOAL:

That air pollution be assessed by competent authorities and subsequently reduced to levels acceptable to those authorities in respect to health, sanitation, aesthetics, meteorology and economics.

## GUIDELINES:

*Provincial and federal*

1. That research facilities should be co-ordinated and expanded as necessary for the purpose of:

- (a) Establishing standards for controls;
- (b) Devising and/or improving ways to measure and identify air contaminants;
- (c) Advising as to the air pollution potential of various sources of contaminants and the necessary control facilities;
- (d) Developing effective remedies.

2. That facilities be established to train staff in air pollution measurement and evaluation techniques, control measures and administration.

*Provincial*

3. That from the point of view of the long-term national interest, the establishment of effective legislative and administrative means by provincial governments for controlling air pollution is desirable.

4. Air pollution has important regional aspects and for this reason, research measurement and control of air pollution will have to take into account its regional characteristics and regional differences as well as its more general aspects and norms.

## RIVER VALLEY REGIONS

## PROBLEM:

The existing framework of water administration in Canada, at all levels of government, and within and between levels, does not, in general, facilitate a comprehensive approach to the multi-purpose planning and development of natural resources.

## GOAL:

To provide a form of administration that is suitable for the planning and development in river basins that vary greatly in character.

## GUIDELINES:

*Provincial, interprovincial, joint federal-provincial, as appropriate*

1. When integrated development of river valley regions is contemplated, planning and advisory committees should be set up by the appropriate governmental authority.

*Representation* on such committees should be from the fields of science, technology, law, industry and the public.

*Functions* of such committees should include:

- (a) Organization of basic studies by specialists,

working co-operatively on (i) resource inventory and problem assessment, (ii) economic development potential, (iii) community environment potential and (iv) engineering alternatives;

- (b) Establishment of basic objectives;
- (c) Consultation with groups in the region, private and public;

(d) Preparation of preliminary programs, including objectives, works and methods, costs, time table;

(e) Recommendation to appropriate governmental authority whether or not the particular river valley region would be further developed within the existing legislative framework or, under a formally constituted river valley agency.

*Any jurisdiction*

2. River basin organizations, concerned with resource development should be administered and managed in a manner that:

- (a) Facilitates a democratic choice of objectives or goals;

(b) Makes it possible to focus into development decisions all of the critical costs and benefits, external as well as internal;



(c) Makes possible the appraisal of proposed water developments in comparison with other alternative means of achieving the same objectives;

(d) Facilitates the marshalling of relevant modern technology from both the physical and social sciences.

#### *Provincial*

3. At the *municipal-provincial* levels, the Ontario Conservation Authorities exemplified an effective type of structure which could be used as a model. Small watershed authorities would not solve problems of co-ordination between watersheds or within a larger basin.

A provincial authority or river basin agency would have to lay down broad guides for this purpose.

#### *Joint federal and provincial*

4. A *national, interprovincial body in the resources*

*field*, perhaps a "Natural Resources Council," should be established with provision for federal and provincial finance and participation, and with a staff of its own. In the field of river valley multiple resource development, this Council would:

(a) Review proposed study programs for the development of comprehensive plans for the larger interprovincial basins;

(b) Review the results of such studies when completed;

(c) Recommend the desirable administrative, financial and other arrangements necessary to implement the plan;

(d) Promote and facilitate an exchange program of staff of river valley agencies, in Canada or elsewhere.

## BROAD ECONOMIC REGIONS

### PROBLEMS:

There are serious barriers to comprehensive resource development in broad economic regions. These are mainly the lack of regional administrative frameworks, the lack of a comprehensive inventory of resources, and the lack of public awareness of the need to act at the regional level.

### GOALS:

A regional approach to economic development:

- (a) Facilitates the exchange of experience between regions with common problems;
- (b) Enables various levels of government to adopt more concrete policies with respect to particular areas;
- (c) Provides a mechanism for increased co-operation between regions and various levels of governments;
- (d) Makes it possible to reduce the range of disparity between regional rates of growth and to limit imbalance between regions;
- (e) Provides opportunity to solve specific problems of an uniquely regional nature;
- (f) Facilitates comprehensive development and use of resources, and allows for the application of common principles to areas with common characteristics;
- (g) Could provide industry with a better framework for planning its location and investment decisions;
- (h) Makes it possible to aid marketing and reduce costs.

### GUIDELINES:

1. *Research*—joint federal and provincial, and federal.

(a) In order to undertake the required research on the problems and potentialities of broad economic regions, there is a need for data on the demographic, socio-economic and resource structure of these areas, related to the framework of decision and activity. At present, the information collected and published by federal and provincial governments is not organized on a comparable basis. It is recommended, therefore, that data collected by all agencies should be on a uniform basis, within a standard framework adaptable to the concept of economic regions;

(b) In order to attain this standard framework, it is recommended, as a first step, that the Steering Committee of this Conference request the federal government to undertake the immediate task of delineating an agreed system of basic economic regions, in consultation with the provincial governments and all interested agencies and on the basis of available research and data. As a second step, it is recommended that regional "Resources for Tomorrow" Conferences be organized on the lines of this definition.

2. *Administrative organizations*—joint federal and provincial, and interprovincial.

(a) It is recommended that specific compacts be entered into between and among provincial

governments and between federal and provincial governments to establish, finance and operate broad economic regional organizations. As an absolute minimum, these organizations should be responsible for data compilation, research and planning but, wherever possible, their functions should be extended to the development and financing of the best use of the renewable resources of these regions;

- (b) It is recommended that the Steering Committee approach the federal government to take the initiative in setting up the federal-provincial machinery for formulating a national policy for the development of renewable resources through broad economic regions.

### 3. *National Resources Council*—joint federal and provincial

A National Resources Council should be established consisting of appointees, governmental and non-gov-

ernmental, of both federal and provincial governments, whose functions would include:

- (a) Delineating resource regions and setting up, where considered desirable, ancillary *Regional Resource Councils*, crossing provincial boundaries if necessary;
- (b) Advising the Government of Canada on national policies;
- (c) Suggesting to provinces programs for resource use and development;
- (d) Providing services such as libraries, information, research and engineering;
- (e) Allocating funds provided by the Government of Canada to assist provinces with approved development programs.

Regional Resource Councils established by the National Resources Council should exercise consultative and advisory functions.

## FRONTIER REGIONS

### PROBLEMS:

1. Assessing the adequacy of the resource base. It was agreed that the resource base varies from community to community in frontier regions and that this resource base should be adequately appraised as a primary step in considering the possible contribution of communities and social capital in such regions.

2. Obtaining optimum participation by all the residents in community life.

3. Adequacy of levels of living.

4. How to achieve progress without paternalism.

5. The need for education, training and intercultural communication.

6. Need for adequate continuing research and suitable pilot projects.

7. Need for planned, well designed and aesthetic communities.

### GOALS:

1. In general, the goals of frontier development are the creation of job opportunities to facilitate a better standard of living for more people, and the stimulation of the general economy.

2. Effective development of frontier regions requires detailed knowledge of resources, conditions, and techniques; without careful planning, based on adequate knowledge, development will be unable to realize its full potential. The group therefore recommends increased effort in *technical surveys* in frontier regions and in *northern research*.

3. The observation was made that having moved through a stage of exploitation followed by conservation, we are now in a period of national resource development based on proper *management*.

4. It is the sense of this meeting that an orderly and beautiful man-made *environment* complementing a beautiful country such as ours, constitutes a highly desirable objective which should be kept to the forefront in all discussions of frontier development. It is recognized that any physical development depends for its support and stability on an economic base and that all solutions may not necessarily be appropriate to each problem in the frontier.

### GUIDELINES:

#### *Provincial, federal, industrial*

1. The techniques for overcoming the main problems:

- (a) *Research*—basic knowledge about resources, conditions and techniques. In making resource inventories, it would be desirable for this to be done on a multiple resource basis as an integrated project. Also, since most of the information needed is of a long-term nature, such as climatological, a program should be undertaken immediately;
- (b) *Government planning and incentives*. Planning involves both a determination of economic potentials and the physical development of attractive communities. These things may be important incentives to private capital. Other possible government incentives may re-

late to power costs, stumpage rates, subsidies, taxes, and guarantees on investment. Long-term benefits need to be weighed against short-term costs;

(c) Improvement of *Transportation*—e.g. recommended that Roads-to-Resources Program be continued with attention to multiple use possibilities. Overcoming the transportation barrier involves an integration of systems of water, railroad, and air transportation;

(d) Improvement in *social amenities*. Adequate standards of cultural, educational and physical community amenities are essential to successful frontier development and settlement.

2. Consideration should be given to development in the light of world market conditions, existing production facilities, and cost-benefit analysis.

*Joint federal and provincial, universities, industry, associations*

3. The role of a *National Resources Council* in frontier development:

A National Renewable Resources Council could be made responsible for research, particularly in a co-ordinating capacity.

To be effective, this agency should be representative of the federal and provincial governments, commercial interests, universities and associations.

It should be sufficiently independent to advise and criticize all the foregoing groups in the interest of sound renewable resource utilization and it should not duplicate the function of the existing agencies.

## AGRICULTURE

*by M. Brownstone*

### LAND MAINTENANCE AND IMPROVEMENT; ADJUSTMENTS ON LAND IN AGRICULTURE

#### GOALS:

1. To supply Canada's domestic food needs as well as the export market.
2. To improve efficiency, production, and farm income.
3. To stabilize output by overcoming natural hazards—drought, flooding, erosion.
4. To contribute to general economic and social well-being on a regional and national basis.
5. To convert land from present use to other uses from which farmers derive higher incomes.
6. To protect land and water resources for multiple and diversified purposes.

#### PROBLEMS:

1. The increase in output required to meet a rise in demand by 1980 estimated at 70 per cent to 80 per cent.
2. The farm firm suffers from low income and low productivity.
3. The rural community and farm families are exposed to social change.
4. Good agricultural land is being absorbed into non-agricultural land, and large acreages are subject to erosion and fertility losses.
5. There is a chronic time lag between development of technological improvements and their adoption.

6. Balanced and co-ordinated participation of all interests is lacking, as is a clear definition of responsibilities.

7. Alternative employment opportunities for farmers are limited.

8. Increases in aggregate agricultural productivity require parallel concern for markets.

9. Competition for foreign markets is becoming more acute.

#### GUIDELINES:

1. Land maintenance and improvement should be developed within a national policy on land and water use with ample provision for provincial, regional and local flexibility. Such a policy, in order to be most effective, should be considered in conjunction with the related resources as part of an over-all policy for renewable resources.

2. The policy should be based on deliberations of an intergovernmental committee not unlike the National Steering Committee but having representation of Ministers of Agriculture, as well as other resource Ministers. A permanent secretariat should be established.

3. ARDA should be amended to delete restricted application to "agricultural purposes." The federal government committee would act in an advisory capacity toward ARDA.



4. The services of P.F.R.A. and M.M.R.A. particularly engineering services, should be continued and made available nationally as requested by provinces. P.F.R.A. and M.M.R.A. should become operational arms of ARDA.

5. Initiation and proposal of projects should be the responsibility of the provinces which should in turn encourage and support the development of local and regional organizations to initiate and contribute to projects.

6. Programs should be based on studies of:

- (a) Physical aspects;
- (b) Economic aspects (for example—cost-benefit analysis);
- (c) Social aspects (for example—effect of development on farm, family and community);
- (d) Governmental aspects (for example—effect of development on local government);
- (e) Development aspects (for example—timing of development, administration, division of responsibilities, financing);
- (f) Self-help aspects (for example—involving the individual and the community).

7. Where projects are undertaken jointly by governments, responsibilities should be divided financially, not operationally or administratively. In prin-

ciple, upon termination of construction of any project, operation and maintenance should become a provincial responsibility.

8. Research should be initiated and carried out at all levels of government, as well as in universities and private organizations.

9. Projects and research should be oriented to all uses of land and water, and to employment of people.

10. An effective information-education program at all levels is vital to the development program.

11. Land use studies in each province are urgently needed. These should be integrated nationally.

12. Land should not be released indiscriminately from agriculture. Its role as a source of food and fiber should be given a high priority.

13. Unsuitable land for agriculture should be shifted to other uses in order to increase economic productivity and improve social security.

14. Population mobility should be facilitated by training and provision of employment opportunities.

15. Policies for public purchase of land are desirable to facilitate proper agricultural land use.

16. Successful rural development will require balance in research and extension, and physical, social and economic analysis of land use.

## FISHERIES

by D. A. Munro

Participants in the fisheries sector of the "Resources for Tomorrow" Conference made good progress in defining goals for development of the fisheries, and clarifying the problems impeding development. Guidelines for action to meet some problems are quite clear-cut; others require further study.

### GOALS:

Estimates of potential supplies for the various fisheries can be expressed in terms of product poundage. It is more difficult to forecast changes in demand, but broad generalizations suitable as a basis for planning can be made.

In summary, prospects for demand and supply suggest a gradual growth in production by the fisheries, with the possibility of substantial development in certain limited sectors.

Because the fisheries are now utilizing excessive labor and, in some regions, excessive capital, development is unlikely to result in a direct increase in employment in the primary industry. Orderly development and increased efficiency should, however, lead to improved returns to all segments of the industry.

Prospects for development were discussed largely with reference to the present locations of the fisheries. A large scale expansion into the ocean fisheries might radically alter prospects for development, but would also undoubtedly compound present problems arising from international competition in the fisheries.

International competition, particularly in export markets, makes it essential to increase efficiency of all operations of the industry.

### PROBLEM:

Fish are extremely sensitive to changes in their environment. The activities of man which result in the most significant changes in the environment are pollution and the obstruction of streams.

### GUIDELINES:

#### *British Columbia*

1. No additional uses of water (e.g. waste disposal or power generation) on Pacific salmon rivers should be initiated, except such as are certain not to reduce salmon production.

*Federal government*

2. Research should be intensified to learn the capacity of salmon to surmount obstruction and to tolerate pollutants, and to design fishways and by-passes for upstream and downstream migrants.

3. Improvement of spawning and rearing areas should be carried out wherever major benefits are possible.

4. Action should be taken to reduce pollution of coastal waters supporting stocks of oysters and clams.

*Federal government and New Brunswick*

5. Damage to Atlantic salmon streams by forest spraying must be overcome by discovery of new insecticides or new techniques and increased attention should be given to this matter.

**PROBLEM:**

Development of the fisheries can be better planned if estimates of potential stocks can be refined.

**GUIDELINES:***Federal government*

This will require continuation and extension of research:

- (a) To define for each species the level of fishing which will result in the maximum sustained yield (particularly on Pacific herring, halibut and other groundfishes, crab and shrimp);
- (b) To determine what environmental factors cause variation in year-class strength (particularly Pacific herring).

**PROBLEM:**

Changes in fishing intensity may adversely affect certain stocks and may have unknown effects on others. International fisheries present special problems of co-ordination.

**GUIDELINES:**

1. The strongest efforts should be made to continue the agreements that prohibit high-seas net-fishing for salmon in the eastern Pacific by Canada, the United States and Japan; and other countries should be discouraged from harvesting these fish.

2. International regulation of Fraser River sockeye and pink salmon stocks and of the Pacific halibut fishery should be continued.

3. The Northwest Atlantic ground fish and scallops, exploited by many nations, should receive greater attention in the collection of statistics and the study of the effects of regulations.

4. International management of harp seal herds should be implemented as soon as possible.

**PROBLEM:**

Many pelagic species, such as swordfish, mackerel, tuna, pilchard and sauries, offer possibilities for expanded production, but little is known of sizes and distribution of stocks. Some freshwater fisheries in northern Canada are similarly poorly understood.

**GUIDELINE:***Federal government*

It is recommended that, for these and other species, exploration, biological studies and experimentation with fishing methods be undertaken.

**PROBLEM:**

Inefficiency in fishing operations results from ineffective use of labor and capital (the free or nominal cost of rights to exploit a common property resource is a major contributing factor), the seasonal nature of most fishing operations, and inadequate fishing methods in many areas.

**GUIDELINES:***Federal government*

1. Government policies for the fishing industry should be designed to bring about greater efficiency in the use of manpower and capital. In other words, policies should be devised to encourage the taking of the optimum catch, as this is related to satisfactory returns throughout the industry. The structure of taxation and related matters should be adjusted so as to provide greater incentives in all phases of the fisheries industry. There should be increased integration of programs in the Federal Departments of Fisheries, Transport, Labour and Public Works which encourage most efficient fishing and processing operations.

2. Economic and technical research for the fisheries should be intensified to facilitate formulation of programs and policies related to the foregoing.

*Federal and provincial governments*

3. There should be a well co-ordinated scheme of fisheries education at all levels and by all media, to ensure the application of developing knowledge and techniques to the industry.

**PROBLEM:**

Inefficiencies in processing operations are the result largely of the seasonal nature of the fishery and of wide and unpredictable fluctuations in fish production.

**GUIDELINES:***Federal government and industry*

These may be reduced to some extent by:

1. Centralization of processing operations.

2. Provision for flexibility in fleets supplying the processors so as to reduce seasonal and year to year variations in supply.

3. Improvement and development of products of the fisheries.

PROBLEM:

Marketing is not developing because per capita fish consumption does not appear to be increasing even with improvements in variety and quality of fisheries products. Improvement of procedures to provide for stabilized prices in "port markets" is desirable.

GUIDELINES:

*Federal government*

1. The program for expansion of the export market should be continued.

2. Detailed surveys should be undertaken of the domestic market for fisheries products (including surveys of the food habits of Canadians).

*Industry and federal government*

3. A large scale market development program should be undertaken on the basis of the findings of surveys noted under (2) above.

PROBLEM:

Increased efficiency in the fisheries would likely result in a decrease in employment opportunities in certain regions.

GUIDELINE:

*Federal and provincial governments*

Plans for readjustment need to be developed on a regional basis with due consideration of the development possibilities in other resources and in secondary industry. Use of short-term subsidies, vocational training and transplantation allowances may be required. It was recommended that there should be government action associated with that provided for agriculture by ARDA.

## FORESTRY

*by E. S. Fellows*

The dominant use of Canada's forests—although far from the only one—is to supply raw material for several of our leading export commodities. Both Forestry Workshops therefore paid most attention to the fact that Canada's relative position in world trade in forest products is deteriorating and the rate of growth of these industries is falling off. Virtually all the conclusions reached and recommendations made by these Workshops sprang from this situation.

RESEARCH:

Both groups devoted much attention to the subject of research; they agreed that much more should be done, especially on problems requiring immediate attention. It was recommended that the *federal government* and the *universities* should concentrate on fundamental studies, while the *provinces* and *industry* should specialize in operations research. Much-expanded grants to universities by both *federal* and *provincial governments* and by *industry* were advocated. The need for co-ordination of research efforts was also emphasized, and priority-

evaluation of research projects by the co-ordinating agency was felt to be a great need. The need for accelerating the implementation of research findings was also stressed. Both groups were in substantial sympathy with the findings of the two Research Workshops.

TAXES AND CHARGES

It was recommended that studies be initiated with the aim of suggesting forms of taxation and government charges which would stimulate optimum development of the forest and its dependent industries and, in this connection, the application of the principle of economic rent in place of stumpage charges for Crown timber leases was believed to warrant close study. The place of *public enterprise* and *co-operatives* in the field of developing forest resources and marketing forest products within a system of fair competition deserves sympathetic consideration. Overhauling *provincial* legislation to remove regulations which add to costs of operation without commensurate advantages to society was strongly recommended.



## TRADE PROMOTION

A vigorous and imaginative program of *trade promotion*, especially with reference to large trading blocs was advocated. It was suggested also that the *forest industries* should seriously consider a re-orientation of their production and marketing patterns to better fit them to trade on world markets.

## PRODUCTION TECHNIQUES

Technological improvements in the *wood-using industries* leading to lower production costs, better products, and a reduction of waste of raw material were suggested as fruitful areas wherein to meet the challenge of substitute materials.

## FOREST MANAGEMENT

It was concluded that policies should be designed to stimulate high-intensity management on the most accessible productive areas, but, at the same time, the orderly development of more remote forest resources should be stepped up. However, in this connection, the group felt that carefully established criteria of economic productivity are needed before wise decisions on development can be reached in specific instances. It was also noted that we urgently require more detailed knowledge of those factors influencing the competitiveness of other leading countries in world trade in forest products. A forest-land-use classification and a study of trends developing in the social and economic pressures on the use of forest land were also advocated.

## FOREST PROTECTION

The group recommended an *intensified education-information* program aimed at reducing the incidence of fires, an increased effectiveness of fire-suppression agencies, and *more effective co-operation among provinces and between provinces and the federal government* (including the use of the armed forces) in meeting emergencies and latent emergencies. *Provincial interagency committees* on pest control were believed to be desirable.

## ECONOMIC STUDIES

A group of economists attending the Forestry Workshops presented a resolution calling for an "*economic advisory committee*" representing *industry, government, and universities* to explore areas where co-operation could benefit trade in forest products and to recommend areas of study and research to assist government and industry in developing effective long- and short-range policies beneficial to the forestry sector of our economy. Forestry Workshop B endorsed this resolution. Research Workshop A made substantially the same recommendation.

The foregoing summary is based chiefly on the official reports of the Workshops. As one individual's appraisal of the general tenor of the discussion, the following observations are offered:

1. That most of our over-all pattern of laws, regulations, tax policies, and systems of Crown timber charges was developed in a different era, partly as the result of expediency, and is now quite outmoded. An objective reappraisal of our attitude toward the forest as a renewable source of raw material for industry is urgently needed.
2. That a far greater measure of co-operation and co-ordination between all interested parties is needed. The reasons are that (a) our available technical skills can best be used in this way, (b) that, although forests are administered provincially, the industries based on them have *Canadian* identity in world trade, and (c) many of the basic problems recognize no political boundaries—each province separately tackling them would involve wasted time, effort, and expense, and the necessity of using investigators inferior to the best available for a co-ordinated effort.
3. In the field of research, the greatest need probably lies in the sphere of economics. A better understanding of the socio-economic influences at work may lead to a wiser selection of research undertakings in other disciplines. The need for well co-ordinated research in many fields is great. Much more money is required for it, and much greater attention should be paid to the wise expenditure of such money.
4. That we must learn more about the factors favoring or hampering our competitors in the world market for forest products; that we must seek out every opportunity for new markets and trading associations; and that industry must carefully study the feasibility of reorienting its past practices to better fit the requirements of world trade as it is now developing. All these points call for earnest co-operation between government (mainly in the federal field) and industry.
5. The keynote throughout was: formalized co-ordination and co-operation is a "must," if we are to solve our problems wisely and quickly. The form which this co-operation may take involves political as well as technical considerations, and therefore no very specific recommendations were made. But the need must be met in some practical way.
6. The conclusions of the Workshops are the more significant by reason of the fact that representatives of industry made up only a minority of the delegates.

## RECREATION

by W. M. Baker

## GOAL:

To ensure that Canadians shall have the fullest possible use and enjoyment of the potentialities of the natural renewable resources of Canada for recreation.

## PROBLEM:

*Research*

There is inadequate knowledge with respect to the potentialities and limitations of the *supply* of renewable resources available for recreation, the nature and extent of recreation programs and facilities currently offered by public and voluntary agencies, and the character of present and future demands.

## GUIDELINES:

A comprehensive balanced *research and inventorial program* to include among other things:

1. Inventories of supply and demand factors, taking into consideration public and private leisure time activities, programs and facilities with due consideration for commercial and non-commercial aspects.

This inventorial program should include:

- (a) *Present recreational land use inventory* designed to reveal the extent, location and accessibility of public and private forms of development for recreation purposes on both private and Crown lands. Such a survey would include:
  - (i) In the private sector such items as cottages, summer camps, golf courses, tourist accommodation, commercial parks and picnic areas;
  - (ii) In the public sector such items operated by all levels of government as parks and recreation areas, nature reserves, historic and archaeological sites, wilderness areas, museums, zoos, botanical gardens, aquaria, planetaria, etc.;
- (b) *Present recreation program inventory* designed to reveal the scope and limitations of recreation programs currently offered by public and voluntary agencies in Canada.
- (c) *Recreation resource capability inventory* designed to reveal the extent and quality of the resource base suitable for various types of public and private recreation development such as parks, historic and archaeological sites, nature reserves, cottages, etc. In this study

attention should be given to the following areas among others:

- (i) Shorelines and river basins for beach and park development including the Atlantic Ocean front and the Great Lakes-St. Lawrence shoreline;
  - (ii) The remote areas such as the Northwest Territories and Arctic Archipelago;
  - (iii) Regional resources within a 50 to 100 mile radius of large urban centres;
- (d) *Comprehensive travel survey* to provide:
- (i) A more definitive understanding of the *foreign travel* pattern through an expansion and refinement of data now supplied by the Dominion Bureau of Statistics.
  - (ii) An understanding of the domestic travel pattern through the establishment of an interprovincial survey at the national level co-operatively planned by all provinces and territories and co-ordinated by some federal organization such as the Dominion Bureau of Statistics to accurately reveal:
    - the total and seasonal volume and value of interprovincial travel;
    - the length of time spent by travellers in each province, and the reason for choice of a specific period when travel is undertaken;
    - the reasons for domestic travel;
    - the reasons for foreign tourist travel;
    - the mode of transportation;
    - the reactions of travellers to food and accommodation provided and the appeal of the area where holidays were spent.
2. Fundamental research directed toward an evaluation of such matters as:
- (a) Effects of various leisure activities on the mental and physical health of the individual and the community;
  - (b) Relationship of cultural and regional patterns to the chosen activities of people;
  - (c) Methods of knowing the real but unexpressed desires of the individuals for mental, physical, social, spiritual development and fulfillment;
  - (d) Implications of technological developments for leisure activities;
  - (e) Motivation for selection of recreational activities.

3. *Operational research* directed toward the establishment of criteria and standards for the planning, development and management of natural renewable resources for recreation to include among other things:

- (a) Criteria for determining the relative roles of private, commercial, voluntary and government agencies in recreation programming;
- (b) Determination of programs to meet the specific needs of people;
- (c) The determination of criteria to be applied in the selection of areas for specific recreation uses such as parks, historic and archaeological sites, nature reserves, etc. and the assignment of responsibility between various levels of government;
- (d) The determination of carrying capacity of various types of parklands and recreation areas per acre.
- (e) The determination of desirable *capital investment* per person or per acre in recreation areas;
- (f) The determination of *acreage standards* per capita;
- (g) The determination of the *economic value* of parkland;
- (h) The nature and requirements of the camping or tenting movement;
- (i) The nature and requirements of the winter recreation movement;
- (j) Selection and training of personnel.

4. The adoption of a broad and flexible approach is required in the consideration of institutional arrangements for undertaking the research program above so as to provide ample opportunities for co-ordinated and co-operative action by:

- (a) *Universities*—to undertake basic research in the relationships of various aspects of the social and natural sciences to recreation. Federal and provincial grant programs for university research should be extended to cover the investigation of problems of park and recreation development;
- (b) *Government departments*—to undertake the research required to support the planning and development and maintenance operations at the federal, provincial and municipal levels of government. This would probably necessitate considerable expansion of the planning section of federal and provincial park administrations;
- (c) *Private organizations including*

- (i) Commercial companies involved in inventing and testing apparatus and materials;

- (ii) Park and recreation planning and consulting services carrying out research for government and private recreation development. The degree to which it is necessary to expand provincial and federal government research staff and facilities will be largely dependent upon the extent to which private consultant research organizations are utilized.

5. Co-operative and co-ordinated action by all levels of government is necessary. Some central agency is required at the federal and perhaps the provincial level to co-ordinate research activities and disseminate information. There are several possibilities in this instance:

- (a) This might become a function of the Planning Branch of the National Parks Service, jointly with provincial parks planning organizations;
- (b) A special commission could be established such as the National Recreation Resources Review Commission in the United States but organized on a permanent basis;
- (c) This might become a function of a National Research Council for Natural Renewable Resources or of some branch of the National Research Council established to handle natural resource research.

#### PROBLEM:

##### *Administration*

While the field of recreation is not exclusively pre-occupied with the use of renewable resources, it does, increasingly, depend on access to renewable resources. Decisions about resources are usually not made on grounds that are primarily recreational, although recreational implications are eventually involved. Inadequate interdepartmental co-ordination and co-operation between park and recreation administrators and those responsible for the development of land and water resources for other uses such as power, irrigation, highways, forestry, etc. is creating needless waste and destruction of recreation potential and impeding the effective adoption of a multiple use approach.

#### GUIDELINES:

1. Recreation should be a legitimate concern of all who make decisions about renewable resources and it is stated as a principle that park and recreational people should be present at all stages of planning and development for the use of renewable resources. To this end the adoption of one of several possible



institutional arrangements might be considered by the various levels of government:

- (a) Establish some type of *interdepartmental committee* that includes major resource management and development agencies along with those responsible for park and recreation development to co-ordinate activities; or
- (b) Establish some type of *land utilization board*;
- (c) Establish some type of *regional planning authority for recreation*.

Agencies of this type would be required to ensure that the needs of recreation and tourism, particularly those of public park development, are met:

- when Crown lands are leased or offered for sale;
- when highways are planned and constructed;
- when reservoirs are designed and constructed, particularly in the arid parts of Canada;
- when schools are designed and constructed for any level of education;
- when housing subdivisions are planned;
- when gravel pits, power lines, which can destroy recreation potential are planned;
- when thorough preparation of master plans for development is made.

#### PROBLEM:

##### *Administration*

Inadequate co-ordination and co-operative action between departments responsible for the development and management of resources for recreation (e.g. parks, historic sites, boating areas, etc.) and those responsible for devising and implementing recreation programs creates problems and wastage.

#### GUIDELINES:

Co-ordination of public park and recreation program services at the three levels of government through:

- (a) The establishment of *interdepartmental committees* designed to co-ordinate activities between agencies of the type mentioned above;
- (b) Establishment of a separate *Park and Recreation Department* designed to bring all activities under a single administration as has been done in British Columbia.

#### PROBLEM:

##### *Jurisdiction*

Confusion with respect to the role of government in relation to commercial and voluntary agencies for the provision of park and recreation facilities and programs hampers development of renewable resources for recreation. Uncertainty with respect to the hierarchy of jurisdictional responsibility between various levels of government for public park and recreation development represents a serious handicap.

Uncertainty with regard to jurisdictional responsibilities for the control of water and shoreline resources is also a very serious limiting factor that the small boat conferences of the Department of Transport in recent years have only skirted with the main emphasis being placed upon a water safety program.

#### GUIDELINES:

1. The role of government in relation to commercial and voluntary agencies might be clarified by the creation of Recreation Councils at local, provincial and federal levels where voluntary agencies would be represented and joint planning and co-operative action attempted.

2. Jurisdictional responsibility for park and recreation development between various levels of government might be clarified:

- (a) With respect to regional or municipal developments within a province by adoption of one of several approaches now in operation in some Canadian provinces:
  - (i) Development by River Valley Conservation Authorities as in Ontario, with technical and financial assistance from the provincial government;
  - (ii) Development by a group of local municipalities with technical and financial assistance under terms of Regional Park Legislation similar to that of Saskatchewan or the legislation providing assistance for municipal park development in Ontario;
  - (iii) Possible financial assistance from the federal government for the development of regional park facilities. Assistance has been provided to the Conservation Authorities in Ontario for winter improvement schemes for the Upper Thames Valley, etc. This pattern could be readily extended to park development by Conservation Authorities if desired;
- (b) With respect to clarification of the "foggy" distinction between the types of development carried out by federal and provincial agencies improvement could be made through regular discussions between provincial and federal park administrators, possibly within the framework of a Canadian Association of Park Executives.

#### PROBLEM:

##### *Legislation*

Present legislation with respect to taxation does not sufficiently encourage the donation of land by

private interests for public park and recreation development.

#### GUIDELINE:

That land gifts for recreational purposes be encouraged by the federal government through legislation providing for a broadening of tax relief to the individual donor such as is now provided to foundations, with safeguard provisions for the acceptance of gifts by appropriate bodies.

#### PROBLEM:

##### *Information-education*

Inadequate provision for the regular exchange of technical information between government administrators in the park and recreation field, the shortage of trained personnel and the absence of an informed organized non-government association to promote the interests of provincial and federal park development are all serious handicaps. The content of present information-education programs currently sponsored by governments is a limiting factor of considerable importance.

#### GUIDELINES:

1. A reorientation of the content of present I. and E. programs so as to secure a more intensive use and greater return from resources devoted to recreation purposes. Present I. and E. programs tend to encourage people to use limited recreation resources solely along traditional lines thereby creating greater pressure upon them. It is suggested that:

- (a) The fundamental purpose of recreation I. and E. programs should be to establish in the mind of the public the fact that recreation is a highly important and legitimate form of land use;

- (b) I. and E. programs should be directed toward a broadening of the interests of people in the varied forms of recreational use that can be made of the resource base. This would require promotion by trained personnel along such lines as:
  - (i) A broadening of interpretive programs.
  - (ii) The introduction of cultural activities where desirable;

- (c) I. and E. programs should be directed toward establishing a greater public awareness of the variety and value of recreational facilities available;
- (d) There should be a co-ordination of government information agencies in the recreation field. The task cannot be accomplished by the information agencies of recreation departments or branches alone.

2. The immediate establishment of a *Canadian Association of Park Executives* to meet at least once a year to frankly discuss problems and exchange information *in camera*. Federal support from the National Parks Service is desirable in such an organization.

3. The establishment of a *Provincial and Federal Parks Association* comprised of and financially supported by public-spirited citizens interested in the promotion of park development.

- 4. The provision of educational facilities for:
  - (a) Short-term course opportunities organized on a national or regional basis for the training of park supervisors;
  - (b) The development of degree courses at university for park personnel;
  - (c) The further development of degree courses at university level for recreational personnel.

## WATER

by K. Kristjanson

Any attempt to summarize the "guidelines to action" which emerged in each resource sector is difficult because the division of the subject matter into the categories of water, agriculture, fisheries, forestry, recreation, etc., is in direct conflict with the underlying theme of the Conference, namely, the multi-purpose development of all of these resources. In a sense, the division of labor between the resource sectors tends to perpetuate the emphasis on a "single resource" approach to development. This limitation must be kept in mind. There is a need to remind ourselves that "water problems," "agriculture problems," etc., cannot be considered in isolation. In

summarizing some of the implications of the Conference, T. K. Shoyama had this to say, "In government particularly we need some especially hard thinking about long-cherished traditions of departmental and ministerial autonomy and how time-honored bureaucratic forms can be adjusted to evolving needs."

Bearing these points in mind it is possible to summarize some of the main "guidelines to action" related to water development which emerged from the Conference.

The Conference provided another opportunity for individuals and groups concerned with water devel-

opment in Canada to express their views about the existing framework for water resource management and the modifications required to meet the changing needs. This opportunity followed closely the work of the House Committee on Mines, Forests and Waters which devoted a full term to the review and appraisal of water management in Canada.

#### GUIDELINES:

In general terms the "guidelines to action" which emerged from the Conference were similar to the recommendations of the Committee on Mines, Forests and Waters and may be summarized as follows:

1. A more positive stance in resource development matters is required in Canada. This is particularly so in "official circles" in Ottawa but is also true in the provinces.

2. The development and management of the water resources of Canada should be based on multi-purpose integrated planning which takes account of the needs for domestic and industrial water supply, recreation, irrigation, power, flood control, navigation, pollution abatement and other uses.

3. Principles and criteria should be developed which can be used as guides in the selection of projects as well as guides in the planning of specific projects designed to serve many uses. To this end, one of the workshops considered a draft handbook on principles and procedures for benefit-cost analysis. The first draft of the handbook was prepared by professionals drawn from industry, government and university. This draft was then circulated for comment to individuals across Canada who had an interest and particular competence in this subject. On the basis of comments received a second draft was prepared for consideration at the Conference. As a result of the comments and discussion in the Workshop a third and final version is now being prepared for publication as a part of the proceedings of the Conference. While it is clearly recognized that benefit-cost analysis is only one of many guides which can be used in the decision-making process it is useful to state the principles and procedures as clearly as possible and to obtain standardization in the use of this technique wherever this seems practicable.

4. More aggressive action should be taken by the federal, provincial and municipal governments to clean up the pollution of our lakes and rivers. More direct action should be taken by industry to prevent water pollution.

There was general recognition that neither the provincial nor the federal governments have the administrative machinery or the personnel required to

conduct broad multi-purpose planning of the major river basins in Canada. In Ontario some excellent work has been done in the development of small watersheds through the Conservation Authorities. In the Prairie Provinces the P.F.R.A. working with the provinces has done some notable work in this regard, although the major emphasis is on the development of water projects for agricultural purposes. Saskatchewan has moved a long way toward multi-purpose planning through the South Saskatchewan River Development Commission. These are indications of steps being taken to implement broad multi-purpose planning of land and water resources. However the general consensus appears to be that more imaginative and long-range planning is required to get maximum benefits from the land and water resources of this nation.

In more specific terms the Conference deliberations suggest a need for action on the part of both the provincial and federal governments to bring about co-ordinated multi-purpose development of the river basins of Canada.

While recognizing that the water resources are owned by the provinces and that they have primary responsibility for their development, the Conference deliberations suggest that the federal government should recognize a broad national interest in resource development which can be applied to policy formulation without infringing upon the proprietary rights of the provinces. This would include adopting fiscal, monetary and trade policies which encourage a more rapid development of the resources of this nation. It would also include taking advantage of every possible opportunity to improve the markets (both domestic and foreign) for the goods and services which can be produced through the development of the river basins of Canada. In addition new techniques are required to make capital available on a long-term basis to encourage resource developments which are beyond the financial capabilities of a single province. In this connection, it was suggested that a "national development fund" should be established in the resources field.

There is widespread feeling that federal participation in water resource development is based on a series of *ad hoc* arrangements administered by several departments without any effective co-ordination between them. Legislation and administration is frequently negative rather than positive—i.e., it is designed to protect the *status quo* rather than to search out and encourage possibilities for a more rapid development of resources. To illustrate, acts such as the Navigable Waters Protection Act and the International River Improvements Act are "preventive" rather than "developmental" in their orientation. Furthermore, provinces have no way of



knowing what principles or criteria will be used to determine the nature of the federal participation in a particular case. To remedy this situation it is suggested: (1) that the officials in the federal government concerned with resource management adopt a positive philosophy of development, and (2) that the administrative machinery be modified and strengthened. The status of resource development should be raised to that of a senior department of government. It is not adequate to have this function relegated to a minor role in a junior department.

Several proposals were advanced for over-all federal-provincial consultative machinery in resource matters.

In most cases the provinces need to focus more attention on the many skills required for multi-purpose planning of resource development including water development. One of the provincial people summarized this point as follows: "If it were ever possible to ignore the close interrelationships between the various resource sectors, and between the technical and socio-economic aspects of development, that time is long past. At certain points, tradition and complacency challenge this view. But the weight of Conference evidence declares categorically that the increasing demands upon particular resources, combined with the need for improving productive efficiency in all areas, necessitates the multiple use approach. Consequently, cross fertilization and the interplay of many skills and disciplines must enter into the understanding of technicians and administrators alike. The administrative forms and procedures necessary to achieve this comprehensive view are of critical importance. The stimulus to this kind of thinking on the part of hundreds of key resources administrators may well have been the most important result achieved by the Conference."

The provinces, each in its own way, are best able to judge what modifications are appropriate. It would seem highly desirable that each province take steps to assess its water resources management and planning procedures in the light of the ideas discussed at the Conference. From such an assessment could emerge a clearer definition of what action each province is prepared to take and also a better appreciation of the role the provinces consider the federal government can perform most effectively.

Because of the widespread interest in water pollution abatement the specific recommendations presented by Water Workshop C (Pollution Control) are reproduced below:

#### *A. To the government of the Dominion of Canada*

1. We wholeheartedly endorse the setting up of a "National Resources Council" as recommended by the Prime Minister.

2. That a water pollution control division be included in the "National Resources Council" composed of representatives from the ten provinces.

3. This division should be empowered to institute:

- (a) Research programs;
- (b) Collect, collate and analyze water pollution control data from this and other countries;
- (c) Co-ordinate the water pollution control objectives for the ten provinces.

4. That the "National Resources Council" study water pollution control problems of a national character.

#### *B. To the governments of the ten provinces*

1. Each provincial government which has not so done, should pass legislation setting up a "Water Control Authority" empowered to control and/or prohibit water pollution in the province.

2. This "Water Control Authority" should assess and analyze individual problems regarding water pollution from industries and municipalities already established in order to adopt a co-operative program to control and/or prohibit pollution.

3. All new industries and municipalities be required to incorporate in their plans a method of controlling and/or eliminating their water pollution.

4. In the powers given to the "Water Control Authorities" shall be included the duty of promoting and developing educational programs at all levels on water conservation and pollution control.

### *Summary*

The work of the water sector suggests the need for:

1. A more positive attitude or philosophy of resource development.

2. A greater emphasis on integrated multi-purpose planning of the river basins of Canada.

3. Modification in existing administrative forms to take account of this need and clarification of the federal and provincial roles in these matters.

4. Standardization in the techniques for assessing alternatives for development.

5. More aggressive action by industry and all levels of government in pollution abatement (see suggestions above).

6. Extending the work of the Conference to a systematic appraisal of the role of resource development in the economic growth of the nation in the context of a rapidly changing world community.

## WILDLIFE

by D. A. Munro

Participants in the wildlife sector of the "Resources for Tomorrow" Conference made substantial progress in defining goals for wildlife management, clarifying the problems impeding further development, and suggesting guidelines for action.

## GOALS:

Wildlife\* is a recreational resource, and the broad objective of management is, therefore, to balance wildlife supply with recreational demand subject to the limitations which may be imposed by other uses of the land. The following principles were accepted as fundamental to wildlife management:

1. Wildlife management will continue to be primarily a public responsibility.
2. No species should be allowed to become extinct through the instrumentality of man.
3. Management practices will not be nationally uniform, but will vary with local conditions and the requirements of various jurisdictions.
4. Ethical considerations are at least as important as economic considerations in wildlife management.
5. Ideal populations of wildlife species are those that will maintain themselves without serious disturbance to their environment and satisfy the public demand for recreation. Compatibility with other interests should be sought through mutual adjustment.
6. Adequate habitat is the quantity and quality of living space that will permit the production and distribution of ideal populations.

As a recreational resource, wildlife is a mainstay of the tourist industry. Wildlife is likely to become of increasing importance as a basis for tourism, which itself will become proportionally more important in the Canadian economy. It is in this way that wildlife will contribute most substantially to the economic development.

Goals for development of the fur industry are not now primarily limited by the supply of furs. While supply problems may become significant, the present low level of economic activity is attributable to lack of product development and product promotion.

Wildlife will continue to be of direct economic significance in frontier regions, where there are some possibilities for development of the use of secondary products such as hides, antlers and feathers, and where subsistence use will continue for some time.

\* includes sport fish

## PROBLEM:

Solution to problems of multiple use of land and water is often held up for lack of quantitative information on the socio-economic values of wildlife.

## GUIDELINE:

*Federal government*

It is urged that the Dominion Bureau of Statistics in consultation with appropriate provincial and federal wildlife authorities proceed at once to develop a definitive appraisal of the socio-economic significance of the wildlife resource as it is related to recreation and other uses, both consumptive and non-consumptive.

## PROBLEM:

Both production and utilization of wildlife are threatened by the continuing decrease in the amount and quality of land and water available for wildlife habitat. This problem is of particular urgency in the case of migratory waterfowl.

## GUIDELINES:

*Provincial governments\**

1. All governments of Canada are urged to acquire or designate land and water areas for the primary purposes of wildlife management and to maintain access to such areas for public use. Such areas must be set aside while they are still available and should be administered by the department of government charged with the management of the wildlife resource. On existing Crown lands, primarily devoted to other purposes, wildlife values should be recognized as comparable with other land use values, and programs for multiple use, involving management of and public access to wildlife, should be developed whenever possible.

*Federal and provincial governments*

2. There should be a review of present and future Canadian needs for parks, wilderness areas, wildlife refuges and reserves for ecological study through establishment of a review board or commission by all governments jointly.

*Provincial governments*

3. A positive program for the encouragement of the production of wildlife on private lands should be undertaken by the appropriate agencies in co-

\* Unilateral action by provincial governments, except with respect to migratory waterfowl which require joint action by provincial and federal governments and the U.S. government.

operation with the land owners. Federally supported research will be required to assist provincial governments.

**PROBLEM:**

Wildlife resources in frontier regions have unexploited potentials for recreational use. This is understandable, but management policies should be sufficiently flexible to allow for the continuing development of recreational use as recreational demand increases.

**GUIDELINE:**

*Federal and provincial governments*

It is recommended that governments review policies for management of wildlife, particularly large mammals, in northern Canada through establishment of a joint review board by governments concerned.

**PROBLEM:**

The low level of economic activity in the fur industry reflects underdeveloped use of a resource.

**GUIDELINES:**

*Federal government*

1. It is strongly recommended that a board or commission, representative of the Canadian fur industry, be established and made responsible for domestic and foreign market research, product development, quality standards, and product promotion.

**PROBLEM:**

The Conference participants felt that existing legislation and administrative institutions are not fully adequate for effective wildlife management.

**GUIDELINES:**

*Federal government*

1. The enactment of a Canada Wildlife Act, comparable to the Canada Forestry Act, to enable the federal government to co-operate with the provinces in wildlife research and management, including the initiation, conduct and correlation of research and dissemination of its findings, and to provide funds for such purposes.

*Federal and provincial governments*

2. All governments should provide mechanisms for co-ordination of the activities of all departments and agencies of governments concerned with resource management.

3. All federal and provincial legislation dealing with natural resource use should have adequate provisions recognizing the value of wildlife as a natural resource.

4. There should be mechanisms for closer liaison between governments where co-ordination of complementary legislation is required for proper management of wildlife (e.g. control of use of aircraft, relation of the Indian Act to provincial wildlife management, etc.) This requires further joint study, perhaps arranged through a federal-provincial wildlife conference.

**PROBLEM:**

If wildlife is to be properly managed in the face of continually increasing demands, the research effort requires strengthening. Many Canadian wildlife problems are related to those of other countries and continents and an intensification of international co-operation would be helpful.

**GUIDELINES:**

*All governments, universities, industry, private and voluntary associations\**

It is recommended that there should be:

1. Increased support for research postgraduate training at universities.

2. Increased support for research in departments of government, and private, professional and industrial organizations.

3. Co-operative research organizations among governments and universities where these are appropriate.

4. More adequate opportunity for co-ordination and co-operation in interdisciplinary research as well as in individual sectors.

5. Increased financial support of the National Research Council so that it may contribute more effectively to research in the biological sciences or, alternatively, that a Renewable Resources Research Council be established to serve a similar purpose.

6. More opportunity for the publication and distribution of research findings, both domestically and internationally.

**PROBLEM:**

Implementation of wildlife research findings through management is hindered by lack of public understanding.

**GUIDELINE:**

It is recommended that information and education programs relating to wildlife be intensified in schools and other agencies.

\* There is a general feeling that the federal government should assume a major role in increased support for research. Perhaps the federal government should commission a study of ways to accomplish this, seeking the advice of the provinces in the process.



**PROBLEM:**

The use of pesticides, herbicides, and some other chemicals damages the wildlife resource to an unknown degree. Pollution resulting from waste disposal, soil erosion, etc., is similarly damaging. Knowledge of the effects of these substances on all the plant and animal components of the environment is too limited.

**GUIDELINES:**

*Federal and provincial governments*

1. It is recommended that all governments undertake a continuing and comprehensive evaluation of

the use of pesticides, herbicides, etc. and that increased facilities be provided for the detection and assay of chemical residues and the assessment of their effect on wildlife.

2. The Wildlife Workshops endorse the principles expressed in the pollution recommendation presented by the Water Workshops and recommend that the federal and provincial governments study, as a matter of urgency, the impact of pollution in its many forms throughout Canada in the coastal waters, and in extraterritorial waters, and take appropriate action to control such pollution.

## INFORMATION-EDUCATION

by D. F. Symington

**GUIDELINES**

*Synopsis:*

*First priority in time: programs feasible at present or capable of early development*

1. Creating a situation favorable to the formation of provincial non-government conservation councils.
2. Strengthening provincial resource departments' information-education facilities including adequate inter- and intradepartmental information flow.
3. Establishing a national clearing house and production unit for technical information (information in layman's language on technology and methods of resource harvesting and processing).
4. Establishing a national clearing house and library for general resources information including a bibliography of technical and general publications.
5. Making an inventory of all information-education materials, national and international.

*First priority in long-term importance*

6. Examination of courses of study of universities, normal schools and schools, to determine the adequacy of subject matter on renewable resources, and to study means of correcting deficiencies.
7. Study of means of measuring effectiveness of information-education programs.
8. Study of means of involving adult education groups and public service organizations, including public information media, in developing public understanding of local, provincial and national problems of resource management for multiple use.
9. Development of personnel capable of accurate interpretation of scientific material, able to develop effective information programs.

10. Investigation of means of involving local groups in information-education programs related to regional development activity. This might include provision of regional information-education facilities by provincial governments.

*Elaboration of points 1 to 10.*

1. *Creating a situation favorable to the formation of provincial non-government conservation councils.*

Various specialized and special-interest organizations exist within each province—fish and game leagues, nature conservation groups, community development associations, forestry associations, etc. Most such organizations have two things in common: that they are inadequately equipped in terms of personnel and funds to develop comprehensive information-education programs; and that they tend to become pressure groups promoting a "preferred use" attitude toward resource management.

In the Information-Education Workshops there was general agreement that there was need for more effective co-ordination among such groups, and that liaison between such groups and the provincial governments should be improved.

Specifically, it was recommended that an organization be created in each province along the general lines of the Ontario Conservation Council. The Council is a private, non-political organization whose objectives include public information on renewable resources. It has a membership of seventeen renewable resources organizations representing all resource sectors including community and town planning organizations. Two senior provincial resource department men attend Council meetings, in order that Council deliberations and plans may be developed with an understanding of the government's view-

point, and that information flow *to* and *from* governments may be improved. The Council has an important role in placing the recommendations and viewpoints of its members before the government and public. It is capable of ensuring that recommendations are responsible, representing carefully-considered viewpoints that are compatible with the over-all requirements for resource development in the interest of the province and its people.

Finances are an important key to the ability of such an organization to function. The Ontario Conservation Council depends on private sources of funds. It is doubtful if many provinces could organize an effective council on this basis. Those with smaller populations will find both funds and leadership a problem. For example, a permanent highly qualified Secretary, with some staff and modest administrative budget, is thought to be essential.

If such Councils are to come into being, funds, with no strings attached, would have to be made available. The only acceptable source of public funds would appear to be such an organization as the Canada Council, or alternatively, a resources council representing provincial governments as a group. A conditional offer of funds to meet a portion of the cost of operation might stimulate provincial resources organizations to take joint action to create conservation councils.

## 2. *Strengthening provincial resource departments' information-education facilities. This includes adequate inter- and intradepartmental information flow*

The Workshops provided considerable evidence that improved information-education programs are essential to improved resource management. Since management is almost completely a provincial responsibility, it follows that the primary responsibility for resources information-education rests with provincial resource departments. Indeed, the resource departments are the only important basic sources of facts about natural resources.

It does not follow, of course, that the information and education agencies of resource departments will be the main disseminators of knowledge in this field. The public media, schools and universities, businesses, public and private organizations, municipalities, River Valley Authorities, etc., all have a vital and essential role in information dissemination.

It does, follow, however, that a dynamic public information service within a resource department can stimulate and aid other agencies in carrying out their share of the information-education task. Equally important, from the viewpoint of the practical administrator, they can maintain an information flow within the department and among departments that

will enhance the ability of all concerned—administrators, scientists, field man and politician—to understand the role of resources and resource management programs in the whole fabric of the society.

At present, the main limiting factor in establishing dynamic programs appears to be the general lack of highly qualified personnel. The ideal qualifications for personnel of a provincial resources department's information-education service would include university training in natural sciences, social sciences and communications (journalism, scientific interpretive writing). Administrative experience, field experience and experience with public media are also highly desirable.

There is need for several dozen such men in Canadian governments, industries and national and provincial organizations. At present it is doubtful if there are a dozen, and certainly few of these would be attracted by the wage scales of provincial information-education agencies.

The problem of creating dynamic information-education agencies is essentially the problem of developing men who could do the job. They would begin to develop eventually, as the need and opportunity became apparent over a couple of decades. But if the present crucial problem is to be met, selected young men must be treated as "cadets" in this field, provided with the incentive of a good wage scale, and given bursaries and careful, rigorous guidance during their six or seven year training and experience period.

## 3. *Establishment of a national clearing house and production unit for technical information*

(Information in layman's language on technology and methods of resource harvesting and processings)

The effect of technology on all aspects of resource development was considered in most workshops. A general expression of opinion emerged, to the effect that there was a lag between the development of new techniques and their application by the primary producer and the processor of resources.

This indicated the need for interpretation of scientific and technical information, to make it understandable by the laymen and available to primary producers. It was generally felt that this should be done by a national production unit and clearing house.

Various organizations, such as the National Research Council, Fisheries Research Board, provincial research councils and many industries do carry on a great variety of technological research projects, and many publish the results. However, it is usually beyond any reasonable terms of reference of these organizations to ensure that the results

of their developments are applied to resources harvesting and management.

Provincial agencies and industries, which may assume responsibility for introduction of technology locally or provincially, have little incentive to promote its introduction elsewhere.

Thus, responsibility for 1) devising new techniques, 2) applying them and 3) disseminating knowledge of them across Canada, is compartmentalized, and many primary producers, lacking knowledge of what is being done and how good it is, are faced with the need to spend time and money on a trial and error approach to increasing the efficiency of their operations. For example, the rumor of a Swedish log milling machine may circulate across the country for years before a given administrator or tourist lodge builder accidentally meets the man who knows what it can or cannot do. Or clothing capable of increasing efficiency in the woods may remain an entry in the files of a defence research organization literally for years before the head of a major logging firm hears about it and persuades a manufacturer to produce it. Refrigeration and storage techniques developed primarily for the fishing industry may remain current knowledge within the industry for some time before their application to agriculture is tested. In short, scores of techniques or technological developments are not being used, or not being used as widely as they might be.

A national clearing house for such information, staffed by creative, open-minded engineers and technically minded, capable information-education men could do much to shorten the time lag between development and application of technology.

#### 4. *Establishing a national clearing house and library for general resources information, including a bibliography of technical and general publications*

The state of Canadian libraries at the present time is such that no comprehensive bibliography of published material on renewable resources exists, let alone adequate collections of books under one roof. A considerable number of fragments, both of bibliographies and book collections, do exist—some of them excellent. In fact, a serious researcher on almost any resource subject would not have to go far beyond Ottawa to locate most pertinent Canadian material and considerable valuable international material. The National Research Council, the National Library, the Department of Mines and Technical Surveys, the Parliamentary Library, the Department of Fisheries, the Department of Agriculture, the Department of Forestry, the Department of Northern Affairs (especially the Canadian Wildlife Service and the Northern Research and Co-ordination Centre) all have excellent libraries,

containing, among other things, a considerable collection of unpublished theses and research papers.

While scientists and trained researchers may, by virtue of special knowledge and training, be able to use these libraries effectively, it is doubtful if a large proportion of provincial administrators, information-education personnel, secretaries and resource organizations, teachers and people in private industry know they exist, let alone how to take advantage of their facilities.

It would be pointless to duplicate book collections that already exist, but trained librarians, with special knowledge of resources and resource administration, could do the following:

1. Develop a comprehensive bibliography of resources literature.
2. Ascertain where or if material is available for lending.
3. Acquire material to fill important gaps.
4. Maintain an index to periodical literature on resources, and collect the more important periodicals.
5. Maintain a lending service, both direct and by mail, thus providing resources personnel elsewhere in Canada with access to the facilities that exist in Ottawa.

After such services had been fully established, it might prove desirable to establish specialized reference services, to facilitate research and fill specific requirements.

With library facilities as a basis, specialists in information-education might do extremely useful work maintaining a flow of information among agencies and acting in a liaison capacity between various information-education agencies.

#### 5. *Making an inventory of all information-education materials, national and international*

Some essential tools of the information-education trade are: pamphlets, posters, motion pictures, slide sets, photographs, exhibits, popular "monographs" on species and habitats, and a host of ideas and devices to gain the attention of that portion of the public that is not keenly interested in resources and is already beset on all sides by importunings to buy, vote, or join.

While possession of these tools may not necessarily mean a substantial information-education program, lack of them does mean inability to get a program, substantial or otherwise, across to the public.

Casual shop talk with information-education specialists from a variety of organizations across Canada reveals instances of hours or days of work gathering materials for a specific job—work that could have been avoided by a simple request to a colleague who had already assembled similar materials.



There is considerable scope for co-operation among the scores of renewable resources organizations in Canada, both private and government. An inventory would establish a basis for this.

In the event that a library did not make a resources bibliography, this might be done as part of an inventory.

6 to 10. *Involving educational institutions, public information media, and other organizations, and creating a climate suitable to the development of diverse, effective resources information-education programs*

Nearly every individual and institution is involved in some way in the communications process. The aim

of those responsible for resource use must be to ensure that key individuals and institutions understand the significance of resources in the whole pattern of society, and to encourage them to adapt their information or education programs to meet the need for better public knowledge of resource management.

It is not possible to develop a formula to cover such a diverse objective. Nor is it possible to allocate responsibility for ensuring that the objective is met. Literally thousands of institutions must share this responsibility. However, it is possible, through study and intensive liaison activities, to more clearly define the problems and action requirements, and to stimulate participation by agencies and individuals.

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**Verbatim Transcripts**

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